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## Journal of Business and Management

*Editors*

Cristina M. Giannantonio, Ph.D.

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# Journal of Business and Management

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## Journal of Business and Management

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# Contents

- The Mediating Influence of Role Stress on the Relationship between Adult Attention Deficit and Self-Efficacy . . . . . 111  
*Graeme H. Coetzer, Byron Hanson and Richard Trimble*
- Anticipation is in the Eye of the Beholder: Top-Level Managers See Things Differently When It Comes to Crises Preparedness . . . . . 129  
*Milan D. Larson and Karen Fowler*
- Personality and Virtual Reality Team Candidates: The Roles of Personality Traits, Technology Anxiety and Trust as Predictors of Perceptions of Virtual Reality Teams. . . . . 143  
*Paul H. Jacques, John Garger, Carroll A. Brown and Cynthia S. Deale*
- Bank Selection Criteria of Retail Customers in Bangladesh: A Study on Khulna City . . . . . 159  
*ATM Jahiruddin and Rumana Haque*
- Impact of Firm Performance on Changes in Strategic Resource Allocation Decisions . . . . . 171  
*Hao Ma and Ranjan Karri*



# The Mediating Influence of Role Stress on the Relationship between Adult Attention Deficit and Self-Efficacy

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*Adult Attention Deficit Disorder (AAD) and stress are pervasive and significant experiences with harmful consequences for both employees and organizations as a whole. This research study proposes a network of significant relationships between AAD, role stress, and self-efficacy. Adults who are experiencing the core symptoms of AAD (difficulties with task activation, concentration, effort, emotional interference, and accessing memory) are less likely to manage their role effectively and develop self-efficacy. The correlations between AAD and both role stress ( $r = 0.49$ ,  $p < 0.01$ ) and self-efficacy ( $r = -0.32$ ,  $p < 0.01$ ) were statistically significant, as was the correlation between role stress and self-efficacy ( $r = -0.44$ ,  $p < 0.01$ ). The Sobel test ( $Z = 6.57$ ,  $p < 0.00$ ) provides support for the hypothesis that role stress mediates the relationship between AAD and self-efficacy. A significant partial correlation between AAD and self-efficacy ( $r = -0.15$ ,  $p = 0.02$ ) remains after inclusion of the mediator (role stress), which limits the finding to partial mediation. Future research needs to draw samples from a variety of work situations.*

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The Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV) defines Attention Deficit and Hyperactivity Disorder (ADHD) as “a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development” (APA, 1994). Recent lifespan research suggests that the majority of children with ADHD continue to experience symptoms as adults (Barkley et al., 2002; Biederman, Mick & Faraone, 2000; Mannuzza et al., 1998; Weiss et al., 1985). A recent national survey found that 4.2 % of US workers had Adult Attention Deficit Hyperactivity Disorder (ADHD), resulting in \$19.5 billion in lost human capital per annum (Kessler et al., 2005). Other studies on the prevalence of ADHD among adults in the United States claim that prevalence rates are much higher (Barkley et al., 2002; Mannuzza et al., 1993, 1998; Weiss et al., 1985). A recent population screen of 966 adults in the United States suggests prevalence rates of 2.9% for narrowly defined ADHD and 16.4% using a more broad definition (Biederman & Faraone, 2005). Prevalence rates of 10%-12% of the adult population in the United States are a conservative average for the prevalence studies that have been done to-date. Kessler et al. (2005) concludes that Adult Attention Deficit Disorders are a common and costly problem within the US workforce.

### **Adult Attention Deficit**

Adults with ADHD have difficulty focusing on their problem behavior and without help, will often fall into a chain of failures (Nadeau, 1997). Barkley (1990) suggests that depression, anxiety, and diminished hopes of future success may even exacerbate the symptoms of adult ADHD. This suggests that without intervention, adults with attention disorders are more likely to find themselves in a debilitating cycle. The chain of failures produced by attention-related difficulties may produce depression, anxiety and hopelessness. This, in turn, exacerbates the symptoms of the disorder and increases the likelihood of ongoing failures. A recent national survey by Harris Interactive (2004) found that the majority of adults with ADHD believed that the disorder had constrained them from achieving both short and long-term goals. Research has confirmed that adults with ADHD attain lower occupational ranking, socioeconomic status, and social class standing when compared with their peers (Biederman et al., 2006; Mannuzza et al., 1993). Research by Biederman et al. (2006) found that, on average, adults with ADHD have annual household incomes that are \$10,791 lower for high school graduates and \$4,334 lower for college graduates. Annual income loss for adults with ADHD in the United States is estimated at \$77 billion, which is similar to income loss estimates for drug abuse (\$58 billion) and alcohol abuse (\$86 billion). Research has also established a link between ADHD and substance abuse (Biederman et al., 2006).

A recent study using data from Fortune 200 companies found that absenteeism and medical costs for employees diagnosed with ADHD were 48% higher. Adults with ADHD were also more likely to change jobs (Corgiat & Goodwin, 1992; Wallis, 1994), engage in part-time employment (Biederman et al., 2006) and seek out jobs that don't require concentration over long periods of time (Weinstock, 1993). They also avoid jobs that require close supervision, repetitive tasks and sedentary performance



conditions (Mannuzza et al., 1993). The disorder is also associated with higher accident rates and lower productivity (Reynolds, 1996, 1997). Adults with ADHD are perceived by their employers as requiring more supervision and as less able to complete assignments (Barkley, 1990).

ADHD may also be associated with positive behaviors like ingenuity, creativity, and determination (Mannuzza et al., 1993), which may explain why entrepreneurs appear to have relatively higher levels of the disorder (Miller, 1993). In fast-paced work environments, adults with ADHD may perform just as well, if not better, than non-ADHD employees (Stuart, 1992). Hartmann (1993) encourages a more encompassing view of adult workers with ADHD by suggesting that employers consider both the negative and positive behaviors associated with the condition.

Research on adult ADHD suggests that the hyperactivity/impulsivity component of the disorder may disappear or not exist (Weiss & Hechtman, 1986, 1993), whereas the inattention component and related cognitive symptoms, referred to as Adult Attention Deficit (AAD), are more likely to persist or develop (Brown, 1995). Brown (1995) suggests that the hyperactivity/impulsivity component should be excluded but also suggests that strict reference to the symptoms of inattention may not capture all of the key symptoms. Brown (1996) proposes five clusters of symptoms, all of which seem to commonly occur among persons with AADs. The five-symptom clusters include: difficulties with activating to work, concentrating, sustaining effort and energy, managing emotional interference, and accessing memory. This suggests that AAD, as opposed to ADHD, may be a more prevalent problem for adult workers and that some of the key symptoms associated with the disorder may have been ignored in previous research. Researchers have also expressed concern about strictly treating Attention Deficit Disorder as a categorical diagnosis, as opposed to a dimensional construct with varying levels of severity (Achenbach, 1991; Blacker & Tsuang, 1992). Categorical diagnosis promotes simplistic use and interpretation of the construct. This research defines adult attention deficit (AAD) as a persistent pattern of inattention and related cognitive symptoms that occur with varying levels of severity and create additional challenges within the academic, work and social life of adults. Although empirical research on the impact of Attention Deficit Disorder and organizational behavior is limited, research to-date suggests that Attention Deficit Disorder is having a wide range of negative consequences in the workplace.

### **The Expected Relationship between AAD and Self-Efficacy**

Adults who experience ongoing difficulty with activation, concentration, effort, emotional interference, and accessing memory are more likely to have difficulty achieving a sense of personal mastery over key life tasks. This should constrain personal performance, thereby negatively affecting what has been called self-efficacy. Social cognitive theory (Bandura, 1986) suggests that cognitive processing of social information can influence human performance. Beliefs about one's ability to mobilize sufficient effort, cognitive resources and the behavioral strategies necessary for successful task completion are considered important determinants of performance and satisfaction (Bandura, 1997). Self-efficacy is generally defined as the perceived

capability for performing a specific task (Bandura & Wood, 1989). It can be improved through positive mastery experiences, the observation of similar others succeeding with sustained effort, receiving realistic encouragement from a credible source, and the perception of being in a performance-ready state (physiological and psychological) (Bandura & Schunk, 1989; Bandura & Wood, 1989). These general determinants influence self-efficacy through a process of cognitive evaluation (Gist & Mitchell, 1992). Positive or negative efficacy information is generated by evaluating the task requirements, related personal experiences and relevant personal and situational constraints and resources. Research has confirmed self-efficacy as a valid predictor of satisfaction, effort, persistence, and success across a wide range of tasks (Gist & Mitchell, 1992; Lennings, 1994; Luthans & Stajkovic, 1998) including team work (Chowdhury, Endres & Lanis, 2002; Phillips, 2001; Cohen & Bailey, 1997).

The modern workplace is increasingly characterized by foreign competition, team work, self-leadership, constant change, projects, stress, and the demand for greater information processing and productivity (Manz & Sims, 1996; Smith, 1997). This is increasing the cognitive load and emotional labor associated with work. A significant increase in dual income families, divorce rates, job insecurity, and threats to national and international security are also adding to the cognitive and emotional challenges faced by adults. Increasing cognitive loads and emotional labor are increasing work-related stress. Surveys conducted over the last two decades suggest that between one third and two thirds of the US labor force experiences high levels of stress at work (Barsade & Wiesenfeld, 1997; Bond, Galinsky & Swanberg, 1998; Driscoll, 1995; Northwestern National Life Insurance Company, 1992; Schultz & Schultz, 1998). Surveys conducted by the European Foundation and European Commission found that stress is actually the primary complaint among workers (Costa & Paoli, 1994). Estimates of the organizational costs of workplace stress for US employers during the 1990s ranged from \$80 billion (Mann, 1996) to more than \$200 billion (DeFrank & Ivancevich, 1998). The American Institute of Stress (2001) provided a more recent estimate of \$300 billion annually. Research also suggests that the majority of workers believe that levels of stress are rising significantly (Armour, 2003; D'Arcy, Masius & Bowles, 1996; Cohen, 1997; Princeton Survey Associates, 1997; Reheiser & Spielberger, 1995).

Success in managing complex and dynamic challenges, both at home and at work, requires the effective use of cognitive and emotional resources. Both personal and work-related responsibilities require adults to identify, process, and integrate complex task information. They must be able to sustain the effort and energy necessary to keep up with the pace of personal and work responsibilities, and make quality contributions in a timely manner. They must also be able to monitor and effectively respond to personal emotions, stress, and social dynamics. Adults who experience an ongoing difficulty with activation, concentration, effort, emotional interference and accessing memory are more likely to have difficulty achieving a sense of personal mastery over key life tasks. This should lower self-efficacy and constrain personal performance. Thus,

*H1: Adult attention deficit will be negatively associated with self-efficacy.*

## The Expected Mediating Influence of Role Stress on the Relationship between AAD and Self-Efficacy

Research has shown that the personal attributes of employees influence their ability to manage role stress, which ultimately influences performance (Chatman, Flynn & Spataro, 2001; Howell & Higgins, 1990; Kelly, Gable & Hise, 1981). Research conducted by the Center for Cognitive and Emotional Health suggests that employees with AAD experience higher levels of stress and have difficulty managing important administrative tasks associated with both personal and professional roles (Hallowell, 2005). This suggests that role stress may be a key mediator of the relationship between AAD and role stress.

Role stress is generally defined as "anything about an organizational role that produces adverse consequences for the individual" (Kahn & Quinn, 1970, p. 41). More specifically, role stress is defined as "a perception indicated by ambiguity, conflict and overload arising from both the characteristics of the individual and the work environment" (Tetrick, 1992, p. 136). Role ambiguity occurs when a person is not sure what their role requires and/or how to do it (Cooper, Dewe & O'Driscoll, 2001; Senatra, 1980), whereas role conflict occurs when the performance requirements of a role are not compatible (Gaertner & Ruhe, 1981; Kahn et al., 1964; Shenkar & Ziera, 1992). Role overload is defined as having too many things to do in a given time period (Bacharach, Bamberger & Conley, 1991; Peterson & Smith, 1995; Gordon, Haka & Schick, 1990).

Moderate levels of stress (referred to as eustress), may stimulate people to excel and increase performance (Selye, 1976). Eustress is conceptually opposite to distress and refers to stress that is taxing but has a sustained positive influence. Bhagat et al. (1985, p. 203) suggest that some workplace stressors are positive because they "produce a state of challenge, coupled with disruptive pleasure." For example, the need to create greater alignment between elements within a role and across roles has been found to reduce boredom (Seiber, 1974) and help energize employees (Jones, 1993; Marks, 1977). However, when stress levels exceed the coping skills and resources available to the employee, the results are typically harmful to both the employee and the organization (Jamal, 1984, 1985; Goolsby, Rhoads & Singh, 1994). A role that becomes overloaded with content may increase productivity in the short-term but performance inevitably suffers (Beehr & Walsh, 1976).

The general view that role stress is detrimental to individuals and organizations has been widely supported and subsequently, the subject of more than 300 journal articles (Ortqvist & Wincent, 2006). Organizational and individual problems associated with role stress include absenteeism (Brown, 2001; Goetzel et al., 1998), high turnover (Lee, 1997; Mann, 1996), burnout (Holloway & Wallinga, 1990; Jones, 1993), emotional exhaustion (Posig & Kickul, 2003), deteriorating personal health, job dissatisfaction (Keenan & Newton, 1984), reduced organizational commitment (Johnston et al., 1990), and lower job performance (Abramis, 1994; Babin & Boles, 1996; Jamal, 1984; Micheals & Rebele, 1990).

Role stress derived from role overload, ambiguity, and conflict should undermine self-efficacy. A lack of clarity about one's role creates confusion and frustration which

undermines productivity. A further tax on productivity results from spending personal resources on role clarification as opposed to content execution. Role ambiguity also undermines the ability to clearly measure performance relative to role requirements and as a result, undermines the ability to develop a sense of mastery. Role overload undermines the ability to perform a job with excellence because of the need to distribute resources over too many tasks. Role overload will also divert personal resources as attempts are made to manage the boundaries of the role as opposed to executing the content. Role conflict creates a win-lose situation where effective execution of certain aspects of the role undermines the ability to perform other aspects of the role effectively. The confusion, frustration and exhaustion created by such a situation should undermine a sense of mastery and performance readiness, which in turn should undermine self-efficacy.

The harmful and costly consequences of role stress underscores the importance of understanding individual and organizational antecedents, and developing strategies for reducing these stressors (Lawson, Liks & Savery, 2001). Research has shown that the personal attributes of employees influences their ability to manage role stress, which ultimately influences performance (Chatman et al., 2001; Howell & Higgins, 1990; Kelly et al., 1981). A recent national survey (Harris Interactive, 2004) found that 64 percent of adults with ADHD reported having difficulties with workplace stress.

Research conducted by the Center for Cognitive and Emotional Health suggests that employees with AAD experience higher levels of stress and have difficulty managing important administrative tasks (Hallowell, 2005). Research on the influence of Adult Attention Deficit Disorder on marital relations provides further evidence of difficulty managing key tasks. Families containing a parent who has an Attention Deficit Disorder often rely on the nonafflicted spouse for planning, organizing, setting limits, time management, problem solving, child rearing, making financial contributions, and maintaining family harmony (Dixon, 1995; Weiss & Hechtman, 1993).

Hallowell (2005) states that the symptoms of AAD are being amplified by an increasingly hyperkinetic work environment. As cognitive load and emotional labor increases, the frontal lobes of the cortex are increasingly used to maintain a sense of direction and organization. The inhibiting functions within the frontal lobes of the cortex are also used to constrain emotional flooding caused by lower brain responses to increasingly threatening conditions. Research conducted (Young et al., 2007) has confirmed that adults with AAD have significantly greater difficulty with planning and problem solving as task difficulty increases. This suggests that limited capacity within the frontal lobes of the cortex to inhibit emotional and cognitive interference reduces the capacity to cope with increasing cognitive load and emotional labor.

Difficulties managing necessary tasks should increase role stress, especially under current organizational conditions. Adults need to attend to multiple sources of role-related information and integrate this information into a coherent mental map of their role requirements. Adults also need to shape role requirements in order to prevent conflicts and maximize person-role fit. As previously suggested, adults need to keep up with the pace of work, make quality contributions in a timely manner, and adjust as new conditions arise. Accurately monitoring and responding to personal emotions and social

dynamics is an important part of this challenge. Adults who experience difficulties activating task work, sustaining concentration, sustaining effort, managing emotional interference, and accessing short-term memory are less likely to manage their role effectively. A persistent constraint on personal productivity should create a backlog of tasks contributing to role overload. Difficulties with sustaining attention, managing emotional interference and accessing short term memory should undermine the development of a clear, well-integrated, and detailed mental map of a role. These challenges could also make it more difficult to update understanding of role requirements as conditions change. This situation may contribute to an ongoing sense of confusion about the requirements of a role. These conditions will produce higher levels of role confusion. Difficulties with gathering, integrating and updating role information should constrain the ability to shape a role. Difficulties shaping a role can lead to higher levels of role conflict. Addressing role conflicts effectively also requires sustained energy and emotional control, which is lacking in adults with AAD. Therefore, the increase in role stress caused by AAD will constrain the development of self-efficacy. This suggests that role stress will mediate the relationship between AAD and self-efficacy. Therefore,

*H2: Role stress will mediate the relationship between adult attention deficit and self-efficacy*

## Methods

### *Subjects and Procedure*

The subjects of this study were 229 university students enrolled in two evening management courses at a large state university in Western Canada. The average age of the subjects was twenty four, with women making up 52% of the participants. All the students reported that they had some work experience, and 63% reported that they were engaged in at least 16 hours of paid work per week. Each of the students completed measures of adult attention deficit, role stress and self-efficacy as part of a personality awareness exercise. Product moment correlations were used to test all the hypotheses regarding associations between the measures, and the Sobel (1982) test was used to examine the mediating influence role stress on the relationship between AAD and personal mastery.

### *Measures*

*Adult Attention Deficit (AAD).* The Brown (1996) Attention Deficit Disorder scales were used to measure the amount of adult attention deficit. The instrument was designed and tested for use with adults eighteen years and older. The forty self-report items on the Brown AAD scales are grouped into five clusters of conceptually related symptoms of AAD. Organizing and activating to work (cluster 1) measures difficulty in getting organized and started on tasks. An example item is: "I am disorganized; I have excessive difficulty keeping track of plans, money, or time." Sustaining concentration (cluster 2) measures problems in sustaining attention while performing tasks. An example item is: "I listen and try to pay attention (e.g., in a meeting, lecture, or conversation) but my mind often drifts" or "I miss out on desired information."

Sustaining energy and effort (cluster 3) measures problems in keeping up consistent energy and effort while performing tasks. An example item is: "I 'run out of steam' and don't follow through" or "my effort fades quickly." Managing affective interference (cluster 4) measures difficulty with moods and sensitivity to criticism. An example item is: "I become irritated easily" or "I am 'short-fused' with sudden outbursts of anger." Utilizing working memory and accessing recall (cluster 5) measures forgetfulness in daily routines and problems in the recall of learned material. An example item is: "I intend to do things but forget (e.g., turn off appliances, get things from store, return phone calls, keep appointments, pay bills, do assignments)."

Subjects used a 4-point scale (1=never, 2=once a week, 3=twice a week, 4=almost daily) to rate the frequency with which each item occurred in their own lives. A total score for AAD was derived by adding up the scores for each of the items. The Cronbach alpha internal reliability coefficient was  $\alpha=0.90$  suggesting good internal reliability.

*Role Stress.* Items for measuring role ambiguity, conflict, and overload were generated after reviewing the Role Stress Inventory (House, Lirtzman & Rizzo, 1970), Occupational Environment Scale (Osipow & Spokane, 1983), Role Clarity Index (Kahn et al., 1964), and the Work Stress Inventory (Barone et al., 1984) (see Table 2). The items needed to be worded in a more general manner so as to capture role ambiguity, role conflict, and role overload as it pertains to the more general context faced by students. Four items were chosen for each of the dimensions of role stress. An example item for role ambiguity is: "I'm confused about the various tasks that make up my role." An example item for role conflict is: "The important tasks I need to do often conflict with one another." An example item for role overload is: "I have more tasks that I can effectively manage." Subjects used a seven point Likert scale (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=neutral, 5=slightly agree, 6=agree, 7=strongly agree) to rate the extent to which they agreed with each item. Scores for each dimension of role stress were derived by adding up the scores for the associated items. A total score for role stress was derived by adding up the scores for each of the dimensions. The Cronbach alpha internal reliability coefficient was  $\alpha=0.92$  suggesting good internal reliability.

### *Self-Efficacy*

The measure developed by Jerusalem and Schwarzer (1995) was used to measure general self-efficacy. The scale measures efficacy with regard to coping with daily challenges and stressful situations. The measure includes ten items and an example item is: "I can always manage to solve difficult problems if I try hard enough." Subjects used a 5-point scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) to rate the extent to which they agreed with each item. The Cronbach alpha internal reliability coefficient was  $\alpha=0.93$  suggesting good internal reliability.

**Table 2:** *Items for Role Overload, Role Ambiguity and Role Conflict*

Role Overload
1. I'm worried that I have more tasks than I can cope with
2. I have more tasks than I can effectively manage
3. I feel concerned about not being able to complete all the tasks I need to get done
4. I constantly feel overwhelmed by the tasks that I need to do
Role Ambiguity
5. I'm not clear about all the tasks that I need to do
6. I don't understand many of the tasks that I need to do
7. I'm don't have a clear sense of how all the tasks I need to do fit together
8. I'm confused about the various tasks that make up my role
Role Conflict
9. Many of the important tasks that must be done prevent me from doing other important tasks
10. Successful completion of many of my important tasks means poor performance on others
11. The important tasks that I need to do often conflict with one another
12. I often have difficulty deciding which tasks to do because they conflict with doing other tasks

Scale anchors: 1=strongly disagree; 2=disagree; 3=slightly disagree; 4=neutral; 5=slightly agree; 6=agree; 7=strongly agree

## Results

### *Descriptives*

Means, standard deviations and correlations among the variables appear in Table 1. All variable distributions were approximately normal and demonstrated reasonable variation across their respective scales. No univariate or bivariate outliers were considered problematic and the product moment correlations revealed significant associations between the variables. Cronbach alpha internal reliability coefficients ranged from ( $\alpha = 0.90$ ) to ( $\alpha = 0.93$ ) suggesting good internal reliabilities.

The steps proposed by Baron and Kenny (1986) and Judd and Kenny (1981) were used to test the mediational hypothesis. Step one establishes that the criterion variable is significantly correlated with the predictor. The criterion variable is regressed on the predictor to estimate and test the path (c) between them. This establishes that there is an effect to be mediated. Step two establishes that the predictor is significantly correlated with the mediating variable. The mediator is regressed on the predictor to estimate and test the path (a) between them. Step three establishes that the mediator affects the outcome variable. It is not sufficient just to correlate the mediator with the criterion variable because the mediator and the outcome may be related due to the joint influence of the predictor variable. Therefore, the predictor variable must be controlled in establishing the effect of the mediator on the criterion variable (path b). The criterion variable is regressed on both the predictor and mediator simultaneously in order to estimate and test path b. Step four determines whether the mediator completely mediates the relationship between the predictor and criterion variables. In order to establish this, the effect of the predictor on the criterion, controlling for the mediator (path c) should be zero. The effects in both steps three and four are estimated in the same equation.

The amount of mediation, which is called the indirect effect, is defined as the reduction of the effect of the predictor variable on the criterion variable, or  $c - c'$ . This difference in coefficients is theoretically exactly the same as the product of the effect of the predictor on the mediator times the effect of the mediator on the criterion, or  $ab$  (thus it holds that  $ab \approx c - c'$ ). The two are exactly equal when multiple regression is used, there are no missing data and the same covariates are in the equation. If step two (the test of  $a$ ) and step three (the test of  $b$ ) are met, it follows that there necessarily is a reduction in the effect of the predictor on the criterion. One way to test the null hypothesis that  $ab = 0$  is to test that both  $a$  and  $b$  are zero (steps 2 and 3).

Much more commonly, a single test is used and is highly recommended (MacKinnon et al., 2002). The test was first proposed by Sobel (1982). It requires the standard error of  $a$  or  $s_a$  (which equals  $a/t_a$  where  $t_a$  is the  $t$  test of coefficient  $a$ ) and the standard error of  $b$  or  $s_b$ . The Sobel test provides the standard error of  $ab$  can be shown to equal approximately the square root of

$$b^2s_a^2 + a^2s_b^2$$

Other standard errors have been proposed, but the Sobel test is by far the most commonly reported. The test of the indirect effect is given by dividing  $ab$  by the square root of the above variance and treating the ratio as a  $Z$  test (i.e., larger than 1.96 in absolute value is significant at the .05 level).

**Table 1: Means, Standard Deviations and Correlations**

	Mean	Std Deviation	1	2	3
1. Adult Attention Deficit	44.88	19.70	(0.90)		
2. Role Stress	42.99	12.49	0.49**	(0.92)	
3. Self-efficacy	53.62	8.57	-0.32**	-0.44**	(0.93)

Note 1: Internal consistency reliabilities are shown in parentheses on the diagonal

Note 2: \*\* = correlations statistically significant at the level  $p < 0.01$  (2-tailed)

### Empirical Tests of Hypotheses

*Hypothesis 1:* The correlation between AAD and self-efficacy is statistically significant ( $r = -0.32, p < 0.01$ ) which provides support for the hypothesis that subjects who scored higher on AAD tended to have lower self-efficacy.

*Hypothesis 2:* The Sobel test is statistically significant ( $Z = -4.566, p < 0.001$ ) suggesting that a significant amount of the lower self-efficacy associated with adult attention deficit is derived from increased role stress (see figure 1). A significant partial correlation between AAD and self-efficacy ( $r = -0.15, p = 0.02$ ) remains after including the mediator (role stress) in the regression. This suggests that increased role stress does not fully explain the association between AAD and lower self-efficacy among the subjects, and that other unmeasured factors are helping to transmit the affect.



**Figure 1:** Mediating Influence of Role Stress on the Relationship between Adult Attention Deficit and Self-Efficacy

Type of Mediation: Partial

Sobel Z value: -4.566,  $p < 0.001$

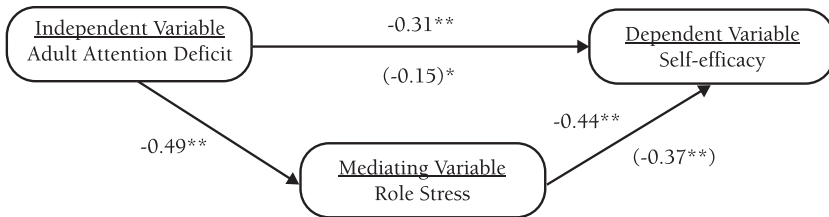
Direct Influence: -0.154

Indirect Influence: -0.165

Note 1: \*\* = correlations significant at the level  $p < 0.01$

\* = correlations significant at the level  $p < 0.05$

Note 2: Correlations in parentheses indicate beta weights computed after the mediator has been included in the regression equation



The results of this research confirm that AAD, role stress, and self-efficacy are all significantly related to one another. More specifically, the results indicate that AAD may contribute to role stress which in turn, undermines self-efficacy, although definite conclusions about causality cannot be made due to the correlational nature of the study. These results suggest that the following processes may be operating. Difficulties with task activation, concentration, sustained effort, emotional interference, and memory are probably constraining productivity and contributing to role overload. Difficulties with attention and accessing short term memory are probably constraining the ability to form a detailed, accurate, and coherent mental map of a role which should increase role ambiguity. Poorly formed cognitive representations of a role, and difficulties with effort and emotional interference are likely to decrease the ability to identify and manage role conflicts effectively. Increased role overload, ambiguity, and conflict should also constrain the ability to measure and perform key aspects of the job. Role stress should also increase the expenditure of emotional and cognitive resources on role management, which is likely to divert resources away from content execution. A sense of personal mastery is unlikely to develop amidst the increased confusion, frustration, and exhaustion caused by increased role stress. In addition, the exhaustion arising out of continuing role stress should undermine a sense of performance readiness. Constraints on developing a sense of mastery and performance readiness should ultimately undermine self-efficacy and performance. The positive association between AAD and role stress suggests that adults with AAD may have a lower threshold for tolerating role ambiguity, overload and conflict. This suggests that adults with AAD are more likely to experience debilitating stress at relatively lower levels of role conflict, overload, and ambiguity. Persistent difficulties with general personal mastery should lower self-efficacy and ultimately role performance.

### *Implications for organizations and education institutions*

Organizations need to be more aware of the influence AAD may have on role stress and self-efficacy. Organizations committed to creating more empowered cultures that emphasize fluid roles and self-regulation may end up producing the opposite if employees with attention difficulties are not provided with the necessary support. Helping employees with AAD to manage role ambiguity, overload and conflict more effectively may be necessary in order for such employees to fully access the benefits of an empowered work environment. Failure to help employees with AAD manage their role may result in a reduction in mastery, performance readiness, self-efficacy, and performance. Making managers and employees more aware of the role management challenges potentially faced by employees with AAD may help to increase the understanding and support received from coworkers and supervisors. Providing such employees with the skills and opportunities to identify and manage role design issues may help to reduce role stress. Managers who are responsible for supervising and developing employees with AAD will likely be required to make relative greater investments in such employees. It is important to provide managers with the support they need when developing such employees, especially during the introduction of more empower work designs. In general, investing resources necessary to support employees with the disorder may help to reduce potential increases in absenteeism, turnover, health care costs, and poor performance.

Increasing coverage of the disorder within the Americans with Disabilities Act appears likely and employers need to be ready to provide reasonable accommodations when required to do so. Making employees and managers more generally aware of the symptoms of AAD and the treatment options available may provide the education necessary to reduce the extent to which the condition remains undiagnosed and untreated.

Educational institutions, like management programs within universities, need to assist potential managers to recognize and respond to the symptoms of AAD in both themselves and others. Early diagnoses and treatment may help to prevent the exacerbating cycles of failure that often accompany the condition. An increased emphasis on role management skills within business programs may be necessary to help potential managers reduce future role stress.

### *Limitations and suggestions for future research*

The instability of the hyperactivity/impulsivity component of ADHD in adults and the traditionally narrow focus on symptoms of inattention (hyperactivity/impulsivity aside) suggests that AAD may be more prevalent and problematic within the US workforce. Studies that determine the prevalence of AAD versus adult ADHD are required to clarify this important issue. AAD appears to have mostly negative outcomes for employees and organizations, but there is some evidence that employees with AAD excel with certain tasks and in certain situations. This highlights the importance of identifying the specific tasks and situations that are problematic or a good fit for employees with AAD. Research that examines the influence of AAD on a wide range of typical work tasks and situations is required. Research that identifies the variety of personal and organizational characteristics, strategies, and supporting

resources that mitigate the negative influence of AAD on role stress and task performance will help to provide clues about possible interventions. Personal case histories of employees who rate high on both role stress and AAD, and low on personal mastery, will provide insight into the progression of these relationships, as well as the personal and organizational factors that influence this progression.

This is a correlational study and as a result, it limits any causal conclusions that can be made. The use of only self-report data prevents statistical control of common method bias. A variety of data collection methods is suggested for future research in order to control for such potential bias. The external validity of this study is limited by the use of adult students. Future research needs to draw samples from a variety of work situations in order to capture the full range of role stress.

Prior to this study, no systematic empirical research existed on the relationship between AAD, role stress, and self-efficacy. This study should help to initiate a new avenue of empirical research in organizational behavior, and help to solidify the body of anecdotal evidence about the influence of AAD in the workplace. This will hopefully bring greater understanding and support to adult workers who are trying to better manage the impact of AAD on both themselves and others.

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# Anticipation is in the Eye of the Beholder: Top-Level Managers See Things Differently When It Comes to Crises Preparedness

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*This study offers insights on how executives, managers, and employees perceive the likelihood of various major crises or disasters. Findings indicate that natural disasters were perceived most likely to occur while terrorist attacks were perceived as the least likely to occur. Further pairwise comparisons reveal significant differences between the various levels of management for major terrorist attacks, natural disasters, and accidental disasters. Suggestions for future research, management implications, and limitations of the study are also offered.*

Crisis management and disaster prevention/preparedness have long been topics of interest in strategy, planning, decision making, and public administration literatures. As pointed out by Mitroff, Diamond and Alpaslan (2006), the crisis management field solidified its modern importance following the Johnson & Johnson Tylenol incident in 1982. Many organizational crises followed. However, more recent devastations such as the Oklahoma City bombing, shootings at Columbine High School, 9/11, Hurricane Katrina, and Virginia Tech shootings have catapulted crisis management into the forefront of many scholarly disciplines. These horrific events have become part of today's reality and as a result, there is an urgent need to understand relationships between crisis management theory and the practice of crisis management beyond a case-by-case basis.

This research assesses the leadership perceptions of being prepared for various types of crises and disasters. More specifically, it establishes the argument that the perceptions of a crisis to occur vary between the leadership levels in organizations. However, before turning the focus on the pre-event crisis constructs, we provide the following review of crisis planning research to establish a context for our findings.

## Crisis and Disaster Planning

### *Heightened Need for Planning*

One week after 9/11, at the *Disaster Recovery Journal's* Fall World Conference in Orlando, a significant number of the companies in attendance already had crisis management plans in place. However 97% of these firms also reported a need to have their crisis management plans changed (*Disaster Recovery Journal*, 2001). Even two years after 9/11, corporate security chiefs said nearly half of their companies were still not prepared in basic areas (*Wall Street Journal*, 2003). Intrigued by this lack of preparedness, *The Wall Street Journal* (2003) published an entire section entitled "How Vulnerable Are You?" addressing the issue of workplace security. During this same timeframe, the *Academy of Management Executive* published an interview with Lee Korins, former CEO of the Security Traders Association, in which he recounted his personal experience in escaping from the North Tower of the World Trade Center immediately following the terrorist attack (Clinebell & Rowley, 2003). Many constituents are also asking how events at Virginia Tech could have been handled more appropriately. Universities are now trying to improve their abilities to respond to unexpected crises. As these events suggest, crisis management and disaster preparedness are crucial topics in today's society and opportunities for empirical organizational research are numerous.

### *Changing Nature of Crisis Events*

In the past, crisis events were often defined as low probability, high consequence events that could threaten organizational legitimacy, profitability, and viability (Shrivastava, 1987). They were also characterized by ambiguity of cause, effect, and means of resolution (Pearson & Clair, 1998). Many of the recent tragic events already mentioned have affected our thinking with respect to some of these contentions. The numerous crises that can be readily cited seem to suggest the probability for occurrence is increasing (Lalonde, 2007). Certainly these events have escalated the necessity for better crisis and emergency planning in all types of organizations and the related bodies of literature are being reexamined.

The crisis, disaster, and emergency planning literatures can be categorized generally as theoretical, empirical, and practitioner-oriented articles. Researchers in these areas have debated the theoretical differences among existing disaster-related paradigms, such as the disaster-resistant community, disaster-resilient community, and sustainable development/sustainable hazards mitigation concepts (McEntire et al., 2002). In order to advance crisis management knowledge, other researchers have attempted to integrate crisis concepts and develop better process models (McEntire et al., 2002; Mitroff, Shrivastava & Udwadia, 1987; Pearson & Clair, 1998).

### *Perception and Organizational Learning*

For most crises, the planning process to help minimize the impact of an event is an important strategic concern that must be addressed by senior executives. Therefore, some of the recent work in this area has studied the role of perception in crisis planning by surveying top managers of Fortune 500 firms (Penrose, 2000). This research examined the perception by managers of a crisis being a threat or an opportunity—and the resulting relationship—to a number of crisis planning variables. As Penrose (2000) and Marra (1998) state, much of the traditional crisis management literature stresses the fundamental importance of implementing an enterprise-wide crisis plan. When organizations practice proactive crisis management, the damage of a crisis can be lessened. Furthermore, when a crisis occurs in organizations that are prepared, learning takes place and those organizations are more prepared for the next crisis. This is due, in part, to accelerated change in organizational processes (Burnett, 1998). In addition, Spillan and Crandall (2002) investigated whether organizations were more prepared if they had crisis management teams in place or if they were more prepared because they had already experienced a crisis. The findings from their study revealed previous experience was more important than crisis management teams (Spillan & Crandall, 2002). When organizations merely respond to a crisis, without a proactive posture, more damage seems to prevail (Nudell & Antokol, 1988). Smits and Ally (2003) also contend that when behavioral readiness is absent, crisis management effectiveness becomes a matter of chance.

Massey (2001) investigated the effects of crisis-response strategies on perceptions of organizational legitimacy. His findings suggest that to maintain legitimacy, organizations must engage in successful crisis management. Prior to 9/11, many organizational decision makers seemed to be either ignorant about the need for their involvement in crisis management and disaster preparedness, and/or reluctant and unwilling to allocate resources appropriately to develop effective crises management and disaster preparedness plans for their employees, in spite of the volumes of practitioner, pedagogical, and theoretical articles on how to plan for a crisis.

Spillan and Crandall (2002) surveyed executive officers of nonprofit organizations and found that the presence of a crisis management team in an organization does not necessarily mean that concern for all types of crisis events exists. Nonprofit managers who have actually experienced a crisis are more concerned about that particular crisis than the managers who have not experienced that crisis. The authors point out that their research sample was comprised primarily of small nonprofit organizations and speculate that smaller nonprofits may be less sophisticated in their crisis management preparations than larger nonprofits.

### *Decision Making and Leadership*

Other researchers have examined the paradoxical nature of crisis (Nathan, 2000), attempted to guide comprehensive government decision making in crisis management (Rosenthal & Kouzmin, 1997), examined public leadership in times of crisis (Boin & Hart, 2003), offered plans for coping with crises in our schools (Perea & Morrison, 1997; Lichtenstein, Kline & Schonfeld, 1994), and described frameworks for ethical decision-making in times of crisis (Christensen & Kohls, 2003). Drabek and McEntire

(2003) provide a thorough literature review and analysis of emergent phenomena and sociological aspects of disaster, pointing out numerous opportunities for further empirical research.

### *Crisis Management Processes*

One of the most comprehensive theoretical treatments of crisis management has been offered by Pearson and Clair (1998). Their crisis management process model provides a comprehensive descriptive model of pre-event environment, perceptual and organizational characteristics, and post-event reactions, responses, and outcomes. As with any crisis event, empirical assessment can be limited. Often researchers do not know what pre-event preparedness was in place, but they can assess visible damage that may have occurred. If no visible damage occurred, researchers may not know about the crisis at all, therefore making any pre-event or post-event assessment impossible. Pearson and Clair (1998) have stressed there is little empirical knowledge available on crisis and disaster planning processes and many of the variables discussed in the literature have yet to be operationalized.

Drawing on Pearson and Clair's model, Hale, Hale and Dulek (2006) empirically studied the complex decision processes employed by executives during their crisis response. While their research was focused on post-event analysis, one finding was particularly relevant to our research. These authors found the presence of a crisis management plan (a pre-event construct) to improve post-event decision making, even if the written plan was dissimilar to the crisis actually faced by the organization.

### *Pre-Event Constructs*

The research presented here focuses on pre-event constructs identified in Pearson and Clair's (1998) work. The three primary pre-event constructs in Clair and Pearson's model include environmental context, such as institutionalized practices, executive perceptions of risk, and adoption of organizational crisis management preparations. As explained by Pearson and Clair (1998), some may perceive a certain event as a potential crisis, while others may see the same event as nonthreatening, thus stressing the critical role of perception. What a person can anticipate, adjust to, and act upon depends on his or her cognitive structure and decision making processes. If top-level managers do not acknowledge the potential consequences of a disaster, they will not do well with preparing the organization's reaction to the crisis. Additionally, a person's comfort level for different events comes from the level of intensity of the event itself as well as the perceived likelihood the event will occur. For example, the more extreme (but less likely to occur) the event (e.g., terrorist attack), the less urgent a top-level manager might respond. Conversely, the less extreme (but more likely to occur) an event, the more prepared an organization will become. Based on Pearson and Clair's (1998) theoretical framework that a manager's perception of a crisis event occurring is critical to an organization's preparedness, our study compares the perceptions of crisis preparedness of different levels of leadership in varying degrees of disaster.

## Research Hypotheses

The intent in this research was to assess the perceptions of different levels of leadership being prepared for varying types of disaster. However, unlike other research such as Penrose (2000), Spillan and Crandall (2002) and Hale et al. (2006) (who chose to question exclusively top management and executives), we wanted to survey a broader range of management compared with organizational employees. Our interest was to investigate any differences that might exist between management levels and company employees. The initial prestudy surveys indicated that many organizational employees were not aware of any crisis or emergency preparedness plans in their work environment. However, when investigated further, some of these organizations did, in fact, have plans residing in the organization's security department or on the organization's website. This led us to believe there could be variations in perceptions of being prepared. The problem (as the study saw it), was that existing plans had never been fully communicated nor institutionalized throughout the levels of the organization. Therefore, this resulted in organizational members being unprepared to respond to a crisis or disaster if one did occur. Therefore, the following hypotheses are offered:

*Hypothesis 1: Top-level managers will have a higher perception of crisis preparedness than mid-level managers.*

*Hypothesis 2: Top-level managers will have a higher perception of crisis preparedness than entry-level managers.*

*Hypothesis 3: Top-level managers will have a higher perception of crisis preparedness than employees.*

*Hypothesis 4: Mid-level managers will have a higher perception of crisis preparedness than entry-level managers.*

*Hypothesis 5: Mid-level managers will have a higher perception of crisis preparedness than employees.*

*Hypothesis 6: Entry-level managers will have a higher perception of crisis preparedness than employees.*

## Methods

### *Rank Order on Likelihood of Events Occurring*

In order to understand the likelihood of a crisis to occur, we asked participants to rank order the likelihood of different crisis events to occur. The five types of crises that appeared on the questionnaire included:

- secondary terrorist attacks (anthrax in mail, attack on a computer system, etc.)

- natural disasters (flood, tornado, earthquake, forest fire, hurricane, blizzard, etc.)
- major terrorist attacks (bombs, destruction of building, biological attack, etc.)
- accidental disasters (long-term power outage, building fire, chemical spill, radioactive leak, etc.)
- workplace violence

Consensus among statisticians (Minium, 1978) suggests that an order effect was not likely to occur, provided we did not present the crises in any predetermined sequential-type order on the questionnaire. Therefore, the order effect was controlled by presenting them in the order shown above that reflected them as independent events.

### *Sample*

The population selected for this research was the alumni database from a medium-sized, AACSB-accredited college of business at a state university in the Southwestern United States. Every graduate from the college for the past 10 years was included in the population, resulting in an initial population of 2,296 graduates. Thirteen alums were eliminated from the study because they had moved home to foreign countries and mailing addresses were not available. The questionnaire, along with a cover letter explaining the research, was mailed to 2,283 alums. Of the surveys mailed, 104 resulted in incorrect addresses and had to be discarded. The final useable sample consisted of 2,179 alums. Of these, 363 alums completed the questionnaire, resulting in a response rate of 16.5%.

### *Demographics*

The majority of the respondents worked at for-profit organizations (80.4%), employing 100-499 employees at their work location (27.5%), employing over 500 total organizational employees (61.7%), and having over 25 work locations for their organization (43.3%). Respondents' work locations included 25 states with the majority represented by the state in which the college of business was located. The gender of the respondents was evenly split with 50.3% being female and 49.7% being male. The majority of respondents were nonmanagement employees (45.2%), followed by mid-level managers (27.5%), then entry-level management (17.4%). Nearly 10% of the respondents indicated their positions to be top-level or executive-level. This met our objective of surveying all levels of employees in different types of organizations.

## **Analysis and Results**

To compare the perceived readiness for a crisis prior to the actual event occurring, we used analysis of variance (ANOVA) methods for the different leadership levels in varying degrees of crisis preparedness for each of the types of disasters. To calculate the likelihood of each type of disaster, we averaged the rank order (1=most likely to occur to 5=least likely to occur) from each respondent's ranking of major terrorist attacks, secondary terrorist attacks, natural disasters, accidental disasters, and

workplace violence. Therefore, a lower mean ranking score suggests a higher perception that the disaster could occur. For the leadership levels in our sample, the average ranking of each type of disaster is summarized in Table 1. Further analysis shows there was a significant mean difference in the rank order of natural disasters  $F(3,359) = 3.287$ ,  $MSE 3.916$ ,  $p=.21$  and accidental disasters  $F(3,359) = 3.24$ ,  $Mse = 3.50$   $p = .022$ , as noted in Table 2.

**Table 1:** Average Ranking of Disaster Types

Descriptives

		N	Mean	Std Deviation
Possibility of a Secondary Terrorist Attack	Top Mgmt/Executive	36	3.67	.676
	Mid-Level Mgmt	100	3.31	1.125
	Supervisors	63	3.38	.991
	Employees	164	3.21	1.150
	Total	363	3.31	1.083
Possibility of a Natural Disaster	Top Mgmt/Executive	36	1.94	.955
	Mid-Level Mgmt	100	2.13	.928
	Supervisors	63	2.52	1.242
	Employees	164	2.38	1.148
	Total	363	2.29	1.102
Possibility of a Major Terrorist Attack	Top Mgmt/Executive	36	4.86	.424
	Mid-Level Mgmt	100	4.60	.974
	Supervisors	63	4.41	1.131
	Employees	164	4.49	1.012
	Total	363	4.55	.986
Possibility of an Accidental Disaster	Top Mgmt/Executive	36	1.75	.806
	Mid-Level Mgmt	100	2.19	1.089
	Supervisors	63	1.75	.933
	Employees	164	2.06	1.089
	Total	363	2.01	1.048
Possibility of a Workplace Violence Event	Top Mgmt/Executive	36	2.78	1.124
	Mid-Level Mgmt	100	2.77	1.294
	Supervisors	63	2.94	1.216
	Employees	164	2.87	1.288
	Total	363	2.85	1.259

**Table 2:** ANOVA Analysis of Mean Differences

		Sum of Squares	df	Mean Square	F	Sig.
Possibility of a Secondary Terrorist Attack	Between Groups	6.421	3	2.140	1.839	.140
	Within Groups	417.778	359	1.164		
	Total	424.198	362			
Possibility of a Natural Disaster	Between Groups	11.748	3	3.916	3.287	.021
	Within Groups	427.712	359	1.191		
	Total	439.460	362			
Possibility of a Major Terrorist Attack	Between Groups	5.431	3	1.810	1.875	.133
	Within Groups	346.569	359	.965		
	Total	352.000	362			
Possibility of an Accidental Disaster	Between Groups	10.489	3	3.496	3.240	.022
	Within Groups	387.467	359	1.079		
	Total	397.956	362			
Possibility of a Workplace Violence Event	Between Groups	1.372	3	.457	.287	.835
	Within Groups	571.989	359	1.593		
	Total	573.361	362			

As indicated in Table 3, further pairwise comparisons using LSD revealed that, consistent with Hypothesis 1, top-level managers had a significantly different ranking of terrorist attacks, natural disasters, and accidental disasters than other managers and employees did. Contrary to Hypothesis 1, however, top-level managers do not have a notably different perception that workplace violence will occur than do the other levels of management or employees. Thus, Hypotheses 2 and 3 are only partially supported with our sample.

In our analysis for mid-level managers, the pairwise comparisons show a significant mean difference when considering natural disasters and accidental disasters, but not in terrorist attacks or workplace violence. Therefore, Hypotheses 4 and 5 are only partially supported.

Investigating the perceptions of entry-level managers, our findings show a significant mean difference regarding accidental disasters. However, when it comes to terrorist attacks, natural disasters, and workplace violence, entry-level managers do not perceive any significant differences than the employees of the organizations used in this study. As a result, Hypothesis 6 is only partially supported.

## Discussion and Implications for Future Research

The reality of our world suggests organizations can no longer ignore the possibility that major crises are a distinct possibility. Although it is impossible to predict all the different scenarios, having some plan in place is paramount. Research has demonstrated that having a crisis plan in place, even though it may not be completely spelled out, helps minimize the lasting effect of the disasters (Fink, 1986). The presence of a crisis management plan also improves crisis decision making processes, even when the plan is dissimilar to the actual crisis faced (Hale et al., 2006). The only way to begin the process of planning is by anticipating some of the many possibilities of a disaster. Thus, the awareness by leaders can only facilitate and enhance the overall



preparation and planning.

This research attempted to operationalize constructs previously identified in the crisis and disaster preparedness literature (Pearson & Clair, 1998) and empirically assess variables identified as important to crisis and disaster preparedness. Our research findings demonstrate that Pearson and Clair's (1998) theoretical propositions hold true when tested with empirical data. More specifically, our results focused on the propositions in their theoretical model that "executive perceptions about risk will foster adoption of crisis management programs" and that a "modest amount of crisis preparation likely will lead executives to believe that their organization is no longer vulnerable to a crisis" (Pearson & Clair, 1998, p. 70). Our research demonstrates that, in many cases, top-level managers and mid-level managers showed a higher level of perceived preparedness than employees. Additionally, entry-level managers demonstrated higher perceptions of accidental disasters. This makes intuitive sense because of the very close day-to-day working relationships that entry-level managers have with employees. This finding does not support, however, the contention that all employees in the organization be thoroughly familiar with the crisis or disaster plan. Instead, it supports the notion that management may believe the organization is more prepared than may actually be the case.

### *Managerial Implications*

Practically speaking, the success stories generated on 9/11 garner their own support for the value of getting prepared. The practitioner literature is also abundant with case-specific and generalized prescriptive advice for being prepared. The 1993 bombing of the World Trade Center spurred the Board of Trade and some other firms in and around the Twin Towers to better protect their employees and data. For example, for Morgan Stanley (the World Trade Center's largest tenant with 3700 employees), sticking with the evacuation plan was critical to saving lives. Even though someone on the South Tower's public address system informed workers it was safe to return to their offices, Morgan's security officer kept employees moving down dozens of flights of stairs. All but six employees escaped. Everyone knew about the contingency plan. Oft-repeated drills saved others as well. Employees of the Japanese firm Mizuho had emergency kits with burn cream, smoke hoods, and glow sticks strapped to the backs of their chairs (*Time*, 2001). While all of these examples are unfortunate, they also offer insight into the benefits of being prepared.

Managers who remain unprepared for managing crises or disasters in their organizations increase the likelihood of being faced with potential legal and other complications. They could be held liable for failing to do so, as is similar in cases involving things like unsafe working conditions. Lockwood (2005) stresses that employees want to feel safe at work and that feeling safe at work contributes to an employee's overall job satisfaction. Bordwin (1999) examines the legal aspects of crisis, indicating managers could get sued. His research cites the potential for criminal liability, for example, when poultry packing executives were jailed for manslaughter when workers caught in a plant fire could not escape because the fire exits were bolted shut.

**Table 3: LSD Pairwise Comparisons: Mean Differences Between Mgrs & Employees**

<b>Type of Crisis – Possibility of a Secondary Terrorist Attack</b>				
<b>Position (A)</b>	<b>Comparison Group (B)</b>	<b>Mean Difference (A – B)</b>	<b>Std. Error</b>	<b>Sig.</b>
Top Mgmt/Executive	Mid-level Mgmt	.357	.210	.090
	Supervisors	.286	.225	.206
	Employees	.453*	.199	.023
Mid-Level Mgmt	Supervisors	-.071	.174	.683
	Employees	.097	.137	.481
Supervisors	Employees	.168	.160	.295
<b>Type of Crisis – Possibility of a Natural Disaster</b>				
Top Mgmt/Executive	Mid-level Mgmt	-.186	.212	.382
	Supervisors	-.579*	.228	.011
	Employees	-.440*	.201	.029
Mid-Level Mgmt	Supervisors	-.394*	.176	.026
	Employees	-.254	.138	.067
Supervisors	Employees	.140	.162	.389
<b>Type of Crisis – Possibility of a Major Terrorist Attack</b>				
Top Mgmt/Executive	Mid-level Mgmt	.261	.191	.172
	Supervisors	.448*	.205	.030
	Employees	.367*	.181	.043
Mid-Level Mgmt	Supervisors	.187	.158	.237
	Employees	.106	.125	.395
Supervisors	Employees	.081	.146	.577
<b>Type of Crisis – Possibility of an Accidental Disaster</b>				
Top Mgmt/Executive	Mid-level Mgmt	-.440*	.202	.030
	Supervisors	.004	.217	.985
	Employees	-.311	.191	.105
Mid-Level Mgmt	Supervisors	.444*	.167	.008
	Employees	.315*	.132	.328
Supervisors	Employees	-.315*	.154	.042
<b>Type of Crisis – Possibility of a Workplace Violence Event</b>				
Top Mgmt/Executive	Mid-level Mgmt	.008	.245	.975
	Supervisors	-.159	.264	.548
	Employees	-.094	.232	.685
Mid-Level Mgmt	Supervisors	-.167	.203	.413
	Employees	-.102	.160	.525
Supervisors	Employees	-.065	.187	.730

\* p&lt;.05

The tragedy that occurred on 9/11 caused some analysts to reexamine the issues of centralization and decentralization of organizational structures and processes as they relate to crisis prevention and preparedness (*Time*, 2001). Hurricane Katrina may certainly fuel those efforts as well. Trophy buildings, high profile locations, single locations, advertising of brand names on vans and buses, employee uniforms, employee criminal records, air travel, management succession, and organizational size have all come under new and heightened scrutiny. Private jet air travel is booming under the assumption that private airports may be safer. Softer, heuristic forecasting techniques have been thrust back into the limelight. Reexamining team decisions has additionally come into question.

One additional finding from this study highlights a common rank order perception of the different crisis events. In all cases, except for mid-level managers, participants in this study perceived the following rank order (from least likely to most likely) of events to occur: major terrorist attacks, secondary terrorist attacks, workplace violence, natural disasters, and accidental disasters. Mid-level managers had similar perceptions of rank order, except for the last two categories. Future research should investigate these rank orders to see if these findings hold true with larger samples from other parts of the United States and in other industries not represented by our sample.

#### *Future Research*

Based on this study, we believe our findings are only the beginning for a better understanding of crisis management. Although we have operationalized part of Pearson and Clair's (1998) model, there are other areas to further investigate. For example, future research should explore the implications of organizational structures. Do certain organizational structures lend themselves to a more effective response to crisis management? Also unanswered is whether or not some industries are better prepared than others. For example, do industries that are classified as hazardous by the Occupational Safety and Health Administration (OSHA) have a more effective crisis management track record? Are these industries required to have a more foolproof system in place because they are closely monitored by OSHA? Another area of research should take an even deeper look into crisis management by exploring "why" the different perceptions exist. Our findings only explored whether or not different levels of management had the same perceptions. Now that we know different perceptions exist, the next logical step is to understand why.

#### **Limitations**

As with all empirical research, our study has limitations that should be noted for future research in crisis planning and preparedness. One of the most visible limitations is that the majority of our responses were from the state in which the alumni graduated. Although one could argue the homogeneity of this sample serves as surrogate control for contextual elements and a more rigorous test of Pearson and Clair's (1998) constructs, it is still worth noting a homogeneous sample has its drawbacks for generalizing the findings. By having a high representation from one area of the United States, other perceptions may exist with employees and managers from

different geographic areas. Similarly, the sample in our study represents a strong bias toward the United States. Therefore, perceptions of crisis preparedness may be different in other parts of the world. Future research should include a broader geographical area. Another limitation to our study is the high number of respondents from for-profit organizations. Although for-profit organizations represent a large percent of US firms, crisis research for non-profit organizations, such as schools, may lend different results. Future research should investigate an array of industries, geographical locations, as well as organizational types and sizes, as we attempt to improve crisis and disaster planning and preparedness. The stakes are high.

### Summary

This research presents results of an exploratory empirical study that assessed the perceived likelihood of different crises. By analyzing the different levels of leadership and their corresponding anticipation of a major crisis or disaster occurring, we hope this study offers insights into the subsequent planning processes of preparing for the “thinkable.” It no longer suffices to refer to recent events as “unthinkable.” These events happened and have occurred (in some cases more than once). In most situations, our findings indicate different levels of management have a different perception as to what kind of disaster is more likely to occur. With the insights gained from this study, future research can begin to address other crisis management questions as to why these different perceptions exist and whether these differences cause any conflicts in the execution of crises management plans. Ultimately, these insights can assist organizational decision makers who understand the realities of today’s crisis-ridden environment.

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# Personality and Virtual Reality Team Candidates: The Roles of Personality Traits, Technology Anxiety and Trust as Predictors of Perceptions of Virtual Reality Teams

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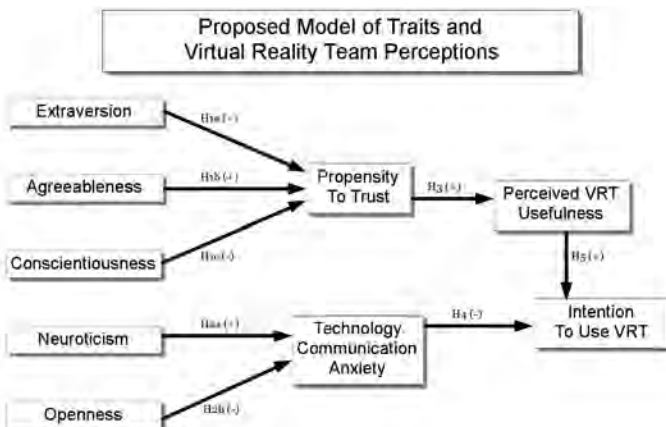
*This paper examines personality traits as antecedents to perceptions of the usefulness and intention to use a virtual reality team (VRT) environment at an early stage of virtual team education. Subjects watched a training video emphasizing communication in VRIs across various boundaries including time, culture, social norms, and organizational expectations. Subjects then completed and returned surveys collecting relevant constructs. Support for the proposed model was found in which personality traits predicted propensity to trust and technology communication anxiety. In addition, propensity to trust and technology communication anxiety predicted perceived VRT usefulness and intention to use VRIs respectively. The model suggests that both stable personality traits such as extraversion and openness, and situation-specific traits such as technology communication anxiety predict subjects' perceptions of the useful and intention to use a virtual team in the near future.*

Relatively recent developments in technology have increased people’s ability to communicate effectively across space and time. Computers, broadband, and various public and private networks have revolutionized the flow of information for the public, private, and commercial sectors. The Virtual Reality Team (VRT) is one result of this revolution in which dispersed members use various information technologies to communicate, allowing freedom from some constraints with which face-to-face teams struggle. However, VRTs struggle with a new set of constraints which they must overcome in order to work effectively and produce quality outcomes. For example, dispersed membership can lead to psychological distance and managing people with varying concepts of approaching work can lead to more time spent on procedures than accomplishing tasks. As such, selecting people for virtual teams involves identifying those who perceive that they can work effectively in virtual environments. The purpose of this study is to identify traits that are likely to lead individuals to perceive positive future outcomes when working in a VRT. In this paper, a virtual team is referred to as a “virtual reality team” or “VRT” to avoid confusion with the word “virtual” potentially meaning “almost” or “nearly.”

### Theoretical Model

The theoretical model developed and tested in this paper is presented in Figure 1, with individual hypotheses indicated. The model suggests that the stable personality traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness will predict situation-specific traits of technology communication anxiety and propensity to trust others. These situation-specific traits will predict both the perceived usefulness and perceived intention work within a virtual team environment in the near future. Table 1 identifies the constructs used in this study giving the construct names, their definitions, and conceptual sources for each of the variables listed. What follows is a theoretical grounding of the hypotheses suggested by the complete model and an account of the methods used to test the hypotheses.

Figure 1: Proposed Model of Traits





**Table 1:** *Constructs, Definitions, and Conceptual Source*

<b>Construct</b>	<b>Definition</b>	<b>Conceptual Source</b>
Extraversion	The degree to which an individual is talkative, full of energy, and emotionally expressive	John & Srivastava (1999)
Agreeableness	The degree to which an individual is helpful and unselfish with others, has a forgiving nature, and is generally trusting	John & Srivastava (1999)
Conscientiousness	The degree to which an individual does a thorough job, is reliable, and perseveres until a job is finished	John & Srivastava (1999)
Neuroticism	The degree to which an individual is tense, worries more than others, and is moody	John & Srivastava (1999)
Openness	The degree to which an individual is original, curious about many things, and inventive	John & Srivastava (1999)
Propensity to Trust	A willingness to be vulnerable to the actions of another party	Jarvenpaa, Knoll, & Leidner (1998)
Tech. Comm. Anxiety	Anxiety associated with communicating with others over existing and new technology	Marcoulides (1989)
VRT Usefulness	The degree to which a VRT contributes to the enhancement of the user's performance	Davis (1989)
Intention to Use VRT	The strength of an individual's intention to use a VRT	Davis (1989)

### *Personality traits*

In extant psychology literature, individual personality traits have been used to predict a variety of perceptions and outcomes. The Big Five Inventory (BFI) (John & Srivastava, 1999) is an instrument that captures five personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness. Extraversion is the degree to which an individual is talkative, full of energy, and emotionally expressive. Extraverts tend to have many friends and enter into relationships freely. Agreeableness is the degree to which an individual is helpful and unselfish with others, has a forgiving nature, and is generally trusting. Agreeable individuals tend to get along well with a variety of others and tend to trust others more quickly.

Conscientiousness is the degree to which an individual does a thorough job, is reliable, and perseveres until a job is finished. The conscientious individual is reserved to let others down and works in an orderly fashion to accomplish tasks. Neuroticism is the degree to which an individual is tense, worries more than others, and is moody. The neurotic individual is concerned about the details of work and often gets bogged down by them. Openness is the degree to which an individual is original, curious about many things, and inventive. The open individual is likely to jump right in to trying new things and finds ways to make things work where others

would give up more easily.

In psychology literature, personality traits have been used to predict a variety of outcomes including predicting work-related performance (Judge et al., 2007), bullying, and discrimination (Parkins, Fishbein & Ritchey, 2006), and the relationship of a focal individual's personality with projection to that of others (Motowidlo, Hooper & Jackson, 2006). The applicability of the 5-factor model of personality to an array of job performance criteria has been shown to exist in a variety of settings. In a meta-analysis of 117 studies totaling nearly 24,000 subjects that examined the relationships between the "Big 5" and performance outcomes, Barrick and Mount (1991) found the conscientiousness construct to be positively related to performance outcomes across occupational types. Furthermore, they found that extraversion was positively related to performance ratings in occupations involving social interaction. In addition, findings from Barrick et al. (1998) link extraversion with the ability of teams to be self-sustaining.

One beneficial aspect to using personality traits in research is that they have been theorized to be long-term to life-long attributes of individuals (Conley, 1985; Eysenck & Eysenck, 1985; Parham & Schaie, 1976). Predicting outcomes or perceptions with personality traits is longitudinally replicable for the same individual. This has a distinct advantage when choosing people for moderate or long-term training. Since personality traits are life-long attributes, identifying ideal candidates at one time makes it likely that the candidates will remain good candidates throughout and beyond training.

### *Trust*

Jarvenpaa, Knoll and Leidner (1998) found support for their hypotheses that team building exercises predict perceptions of ability, integrity, and benevolence which in turn, predict trust in global virtual teams. Mayer, Davis and Schoorman (1995, p. 712) define trust as the "willingness to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." This definition has important considerations for VRTs where monitoring and controlling others is difficult, if not impossible. Consequently, individuals with a need to monitor others for lack of trust will find it difficult to work in VRTs effectively. Couch and Jones (1997) and Gurtman (1992) argue that trust is essential to the development and maintenance of team member relationships and is linked to the quality of those relationships. Identifying antecedents to propensity to trust at the individual level can give insight into those who will adjust to VRTs successfully. Of note, Ding and Mowei (2005) found no differences in levels of trust either between males and females or within the age range of the undergraduate students used in their research. Therefore, there would be no compelling reason to include age and gender within the scope of variables used in the present study.

There have been few studies linking elements of the 5-factor model of personality and trust. Two such studies, however, establish linkages between personality dimensions and trust. In one such study, Sutherland and Tan (2004) construct a theoretical framework linking extraversion and openness with greater propensity to

trust, while higher levels of conscientiousness would be related to lower propensity to trust. In general, extraverts enter into relationships easily and seek many different relationships simultaneously. The more extraverted a person is, the more that individual has many relationships that tend to be shallow. In contrast, the introvert often has fewer but deeper relationships. The extravert is more interested in the quantity rather than the quality of relationships, resulting in an individual being more willing to trust in order to attain more and more relationships to satisfy his/her need for interpersonal interactions. As such, the degree that an individual is extraverted will predict that individual's propensity to trust. Given the discussion above, the following series of hypotheses are offered beginning with:

*Hypothesis 1a: Extraversion will be positively correlated with propensity to trust.*

Agreeable individuals by nature get along with others and trust more easily than most people. This trait to be agreeable results in an individual who, at the outset of a relationship, engages in trusting behaviors earlier than someone with a lower need to be agreeable. In addition, the agreeable individual may even trust too soon in a relationship resulting in good outcomes when the trusted party is worthy of trust and negative outcomes when the trusted party is not. Regardless of the trustworthiness of the second party, individuals with a higher need to be agreeable will trust more readily in situation-specific situations. Indeed, Matzler, Mooradian and Renzl (2006) found that individuals high in agreeableness more readily share knowledge thus resulting in higher levels of ratings of interpersonal trust. Therefore,

*Hypothesis 1b: Agreeableness will be positively correlated with propensity to trust.*

The conscientious individual detests letting others down and seeks to be reliable to others. This individual finds it more difficult to trust in others in a team environment for fear of other people's unreliable behavior reflecting on him/her. The conscientious individual prefers to work alone when he/she knows that his/her outcomes will be evaluated by others. With a need to be reliable to such raters, uncertainty brought on by a need to trust others to perform tasks makes it difficult for the conscientious individual to trust. Hence,

*Hypothesis 1c: Conscientious will be negatively correlated with propensity to trust.*

#### *Technology anxiety*

Anxiety associated with using and learning to use technology has been explored in extant literature (Lewis, Daley & Shea, 2005; Marcoulides, 1988, 1991). Beckers, Schmidt and Wicherts (2007) found that when using pencil/paper and computer collection methods, computer anxiety was more strongly related to trait anxiety than to state anxiety. However, they also found that in the computer collection, computer anxiety and state anxiety were related "suggesting that state anxiety in situations involving a computer is caused by pre-existing computer anxiety" (Beckers et al., 2007). Individuals working in VRIs often find themselves using new technology for

the first time and existing technology in new ways. Individuals with a general fear of using technology find it difficult to perform well in VRTs where using technology is the primary communication instrument through which tasks are accomplished with other team members. In a study of personality and Information Technology (IT), Perrewe and Thatcher (2002) found that computer anxiety was negatively related to computer self-efficacy. This suggests that confidence in using computers is a function of an individual's apprehension and ultimately avoidance of computer usage. Since much of the communication in VRTs is conducted over computers connected to networks, investigating the antecedents to computer and technology anxiety will provide better insight into the causes of this phenomenon.

The highly neurotic individual worries about future events and responsibilities. These individuals are also concerned about the details of how to accomplish tasks and the obstacles that are ahead. The thought of using new technology or familiar technology in new ways makes the neurotic individual avoid such situations where there is uncertainty in future outcomes. This individual is more likely to experience anxiety with the concept of communicating through unfamiliar media, and absent intensive training, will immediately reject the use of virtual reality teams as a means to accomplish work-related tasks. Hence,

*Hypothesis 2a: Neuroticism will be positively correlated with technology communication anxiety.*

The nature of the open individual is to be curious and try new things. These individuals are naturally curious about communicating in VRTs and would not be apprehensive of trying new ways of working with others. As an individual with a high need for openness is always looking for new ways to accomplish tasks, communicating over technology with others would be a welcomed experience. This results in lower levels of anxiety when prompted to communicate with unfamiliar devices. Hence,

*Hypothesis 2b: Openness will be negatively correlated with technology communication anxiety.*

#### *VRT constructs*

In a study by Davis (1989), the author describes a construct that measures the degree “to which an application contributes to the enhancement of the user's performance.” This definition which describes the perceived usefulness of an application is a part of the Technology Acceptance Model (TAM) (Davis, Bagozzi & Warshaw, 1989). Another construct in the TAM, behavior intention, describes the strength of an individual's intention to use the application under study and derives from the more general Theory of Reasoned Action (Ajzen & Fishbein, 1975, 1980). One advantage of these constructs is the ability to capture perceptions about a specific technology rather than capture perceptions of the ease of use and intention to use technology in general. Therefore, it is possible to capture these constructs as they relate specifically to a technology under investigation.

The Technology Acceptance Model (TAM) (Davis, 1989; Davis & Venkatesh, 2000)

posits that perceived usefulness of technology is an important construct in understanding why individuals adopt technologies. Given that trust in VRTs is integral to successful performance, trust will be perceived as a necessary component to the usefulness of VRTs as a means to accomplish tasks. Therefore, the following hypothesis is offered:

*Hypothesis 3: Propensity to trust will be positively correlated with perceived VRT usefulness.*

It is reasonable to assume that anxiety about any component of an unfamiliar technology would result in a decreased intention to use the technology. Individuals who perceive anxiety when they use technology will be less likely to use VRTs when they are informed that communicating with technology is a major component. In addition, technology changes at a rapid pace making competency in today's technology obsolete in the foreseeable future. For this reason, technology use creates uncertainty as to the perishable skills associated with learning to use technology effectively which elevates an individual's anxiety when evaluating the need to communicate exclusively with technology in a VRT. This, in turn, reduces the likelihood that an individual will choose to work in a virtual team in the future. Hence,

*Hypothesis 4: Technology communication anxiety will be negatively correlated with intention to use VRTs.*

The TAM posits that perceived usefulness of technology predicts an individual's intention to use that technology. In conjunction with this relationship, individuals who perceive VRTs as useful will be more likely to work in a VRT. Hence, in line with previous research,

*Hypothesis 5: Perceived VRT usefulness will be positively correlated with intention to use VRTs.*

## Methods

### *Sample*

Subjects were 276 undergraduate junior and senior management students from a midsized, comprehensive university in the United States who volunteered to be a part of the study during the spring 2007 semester. Surveys were administered in 9 courses encompassing 13 sections. Of the 276 subjects who volunteered, 252 returned completed surveys, a 91.3% response rate. 131 (52%) of the subjects were female and 121 were male.

### *Measures*

The Big Five Inventory (John & Srivastava, 1999) consisting of forty-four items was used to measure extraversion (8 items), agreeableness (9 items), conscientiousness (9 items), neuroticism (8 items), and openness (10 items). Propensity to trust was

measured with seven items which were modified to reflect subjects' perception of general trust in others (Jarvenpaa et al., 1998; Mayer et al., 1996). Technology communication anxiety was measured with two items adapted from Marcoulides' (1989) Computer Anxiety Scale. These items reflected a subject's anxiety in communicating with others over existing and new technology. Perceived usefulness (4 items) and propensity to work in VRTs (2 items) were measured with six items from the Technology Acceptance Model (Davis, 1989; Davis & Venkatesh, 2000). All items were gathered using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with 2 through 4 representing intermediate responses.

### *Procedure*

The study took place during the beginning of normal class time so subjects were not asked to participate in an unfamiliar location or at an inconvenient time. Subjects completed a preliminary survey consisting of the extraversion, agreeableness, conscientiousness, neuroticism, openness, propensity to trust, and technology communication anxiety constructs. These constructs were specifically collected before the VRT introduction so responses to these items were not influenced by the subsequent VRT training.

Subjects then watched a video about communicating in VRTs. This video consisted of an 18-minute production titled *Building the Virtual Team: Communication Across Cultural Boundaries* (Customer Service University, 2006). The purpose of using this video was to introduce the topic of VRTs to the subjects without providing any significant amount of skill development in any specific facet of VRTs. The video focused specifically on crossing boundaries in virtual teams by following a virtual team manager as she struggles with differing team members' perceptions of time, social norms, cultural issues, and organizational expectations. Actors played out their roles and occasionally spoke directly to the audience explaining their individual point of view emphasizing the crossing of boundaries. In no way are the current authors affiliated with the publisher of the video and the current authors received no compensation for using the video in this study. After the video, subjects completed a survey consisting of the perceived usefulness and intention to use VRT constructs.

### *Data Analysis*

Data were analyzed using multiple regressions to obtain standardized regression weights, squared multiple correlations, and significant levels for test statistics. Since multiple items were collected for each variable under study, scale scores were created by taking a mean of the items to estimate constructs. Regression analysis was chosen to test the relationships among the constructs because it meets two main criteria for the present study. First, it allows the simultaneous evaluation of multiple, antecedent constructs on an endogenous construct without regard to the order in which the antecedent constructs are entered. Second, multiple regression allows for a measure of either the positive or negative strength of a relationship between two constructs allowing the researcher to determine if a hypothesized relationship is statistically justified.

## Results

Preliminary analyses of data included calculation of construct means, standard deviations, and correlations. Construct reliabilities (coefficient alphas) ranged from 0.70 for the propensity to trust construct to 0.85 for the extraversion construct. A summary of these statistics is shown in Table 2.

**Table 2:** Means, Standard Deviations, Construct Correlations, and Scale Reliabilities†

	Mean	SD	1	2	3	4	5	6	7	8	9
1. Extraversion	3.36	0.70	0.85								
2. Agreeableness	3.73	0.52	0.17**	0.75							
3. Conscientiousness	3.58	0.51	0.14*	0.32**	0.73						
4. Neuroticism	2.82	0.65	-0.44**	-0.27**	-0.20**	0.80					
5. Openness	3.40	0.57	0.35**	0.17**	0.12	-0.26**	0.78				
6. Propensity to Trust	2.99	0.56	0.15*	0.29**	-0.04	-0.18**	0.14*	0.70			
7. Tech. Comm. Anxiety	2.19	0.82	-0.11	-0.13*	-0.12	0.22**	-0.21**	-0.07	0.75		
8. VRT Perc. Usefulness	3.10	0.76	0.10	0.09	0.03	-0.06	0.12	0.17**	0.02	0.83	
9. Intention to Use VRT	2.99	0.88	0.04	-0.01	0.10	0.03	0.14*	0.08	-0.08	0.65**	0.76

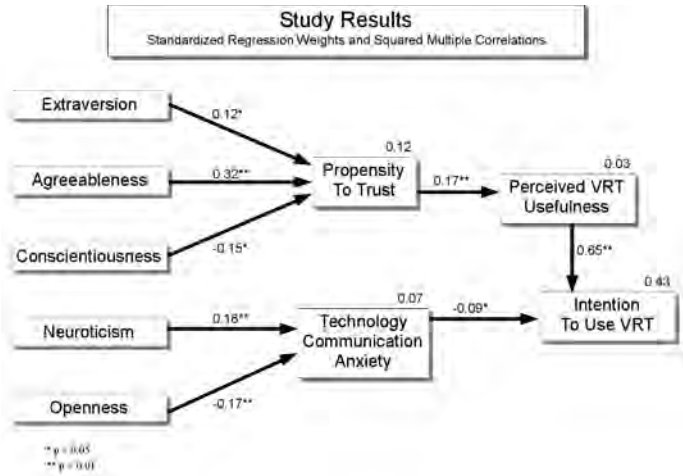
† Cronbach reliabilities shown along the diagonal

\* p < 0.05

\*\* p < 0.01

Evidence was found in support of Hypotheses 1a (standardized regression weight = 0.12, p < 0.05), Hypothesis 1b (standardized regression weight = 0.32, p < 0.01), and Hypothesis 1c (standardized regression weight = -0.15, p < 0.05). Evidence was also found to support Hypothesis 2a (standardized regression weight = 0.18, p < 0.01) and Hypothesis 2b (standardized regression weight = -0.17, p < 0.01). Propensity to trust was positively correlated with perceived VRT usefulness in support of Hypothesis 3 (standardized regression weight = 0.17, p < 0.01) and technology communication anxiety was found to negatively correlate with intention to use VRTs in support of Hypothesis 4 (standardized regression weight = -0.09, p < 0.05). Commensurate with previous research, perceived VRT usefulness was found to positively correlate with intention to use VRTs in support of Hypothesis 5 (standardized regression weight = 0.65, p < 0.01). Squared multiple correlations were 0.12 for propensity to trust, 0.07 for technology communication anxiety, 0.03 for perceived VRT usefulness, and 0.43 for intention to use VRTs. A summary of these findings is shown in Figure 2.

**Figure 2: Standardized Regression Weights and Multiple Correlations**



## Discussion

The results found in this paper suggest that personality traits predict two important factors in people’s perceptions of the usefulness and intention to use virtual reality teams. VRTs amplify the saliency of subjects’ trust in other group members because dispersed members are unable to monitor or control the behaviors of other members, a major component when assessing trust in others. People who have a propensity to distrust others find it difficult to operate within an environment where they must rely on others and when rewards are distributed in accordance with team, not individual, performance. Individuals who are generally anxious about using technology to communicate with others are unlikely to choose to work in VRTs where technology is a predominant component in accomplishing tasks with others. As such, additional and potentially costly training is necessary to ensure comfort levels with technology are achieved with these individuals.

Findings from previous research that suggest positive relationships between extraversion and agreeableness with propensity to trust were confirmed by this research and underscore the impact of these traits on an important antecedent to the quality of relationships between team members. In addition, these results suggest that individual contributors possessing attributes associated with conscientiousness may not adapt as well to VRT environment and that organizational interventions designed to develop and grow trust among new VRT members would be beneficial. Jarvenpaa et al. (1998) argue that trust in VRTs can be increased by emphasizing and reinforcing results orientation, rotating team leadership, and ensuring that task and goal/subgoal objectives are clear. At the same time, trust may be enhanced and anxiety levels may be lowered by enhancing self-esteem and self-confidence via on-demand availability of help when requested and in-depth positive feedback that includes reference to specific elements of team member performance. Jarvenpaa et al. (1998) argue that certain team process design features consistently associated with high-trust teams are the



development and ingraining of team processes to address the issue of free-riders, monitoring communication among team members to ensure that messages are complimentary and encouraging, and the development of an interdependent team culture so that individual members do not feel that they are on their own.

The concept of distrust based on an inability to monitor others' behaviors has important considerations for both intra and interorganizational communication. Levels of interorganizational trust can often be enhanced by incorporating contractual relationships that outline responsibilities, duties, and timelines for completion. Intraorganizational trust rarely benefits from formal agreements. Instead, trust among coworkers must develop from informal relationships. In VRTs, trust is more difficult to develop because of the reduced or nonexistent ability of coworkers to monitor each other for deviations from expected behaviors. Trust in these environments derives more from experiencing consistent behavior and from categorical knowledge about others such as expertise, certifications, or education rather than from informal exchanges which serve to build rapport. Communication in VRTs which tends to be more action oriented rather than socially constructed limits the informal exchanges from which trust develops. Therefore, results of this study suggest that candidates who trust openly can make the transition to a VRT environment more easily.

Also predictive of good VRT candidates is the concept of technology communication anxiety. Some individuals appear to be naturally resistant or apprehensive to new ways of doing things which was captured in this study with the openness construct. In predicting technology communication anxiety from subjects' openness, results from the present study suggest that a significant portion of apprehension toward communicating over technology derives from openness; a core personality trait indicating originality, curiosity, and inventiveness (McCrae, 1994; Piedmont, 1998). Essentially, individuals who possess a willingness to try new things tend to perceive VRTs as a new way to work and accomplish organizational tasks and are energized by the prospect of working within the novel context represented by the VRT environment.

The importance of this study is illuminated by the perceived VRT usefulness and intention use VRTs. In the present study, propensity to trust predicted the subjects' perception of the usefulness of VRTs. From this, it can be surmised that individuals who are generally distrustful of others do not view VRTs as being useful because not enough can be accomplished in an environment where monitoring others is reduced or eliminated completely. This finding suggests that the perceived utility of VRTs is at least partially constructed socially; beliefs of VRT usefulness can be predicted from the individual's perception of interactivity with team members in a hypothetical VRT. The importance of this indicates that people's projection of future trusting intentions affects their perceptions of the usefulness of using VRTs. In contrast, the finding that individual technology communication anxiety predicts intention to use VRTs if given the opportunity suggests that perceptions of VRTs are also formed by situation-specific traits. Consequently, choosing candidates for VRTs involves an examination of both core personality traits as well as situation-specific traits which are formed socially among others.

The importance of choosing the right people to work in VRTs is magnified when

the costs of failed VRT endeavors are factored into the equation. Organizations interested in implementing VRTs need to identify employees most likely to succeed in these environments. Rather than take a trial and error approach to choosing VRT candidates, these findings can help organizations begin to select employees based on traits to fit candidates to the VRT environment. This approach is particularly prudent for organizations just starting to implement VRTs into the organizational structure or when new communication processes dominated by technology are introduced.

The novelty of being in VRTs as a means to accomplish a goal may itself be a source of trust that can be leveraged. Bunker and Lewicki (1996) argue that a component of trust is identification-based trust and an element of VRT membership may be perceived by those individuals in the VRTs as an element of focal member's self-identity that each has in common. It may be inferred from the framework of trust articulated by Voci (2006) that those in VRTs develop a sense of self-identity that includes membership in the VRT which leads to enhanced levels of trust towards fellow colleagues who are also in the VRT.

While the scope of this study focuses on the relationship of individual level phenomenon, scholars have also recognized the effects of task and context on individual's behavior and attitudes. The characteristics of the task and the work context are also factors that bear on individual success in VRTs and the performance of them as a whole. Findings from Workman, Kahnweiler and Bommer (2003) offer helpful insights with respect to the task issues that managers must consider when implementing VRTs. They argue that VRTs can result in worker isolation and a reduced perception of task structure. To overcome these challenges, the optimization of media richness associated with VRT member interaction should be enhanced by initially assigning relatively structured tasks to VRTs and incorporating rich communications media such as video teleconferencing so as to facilitate team interaction and task completion. Furthermore, to accommodate individual differences in assimilating the amount of incoming sensory information, individual VRT members should be given choices in selecting media during communications so that the nature and form of inputs can be readily modified to be compatible with the member's preferences. An example would be to offer VRT members the capability of selecting or deselecting media inputs/outputs such as whether or not video signal is sent and/or received in a given interaction between individuals on a given VRT.

At the organizational level, Armenakis, Schraeder and Self (2007) offer insights that pertain to readiness issues when considering VRTs. Often when implementing change in an organization, managers underestimate the need to communicate the justification association with the change and the level of organizational support directed to employees impacted by changes such as implementation of VRTs. Furthermore, they underestimate the cost and time involved to affect levels of desired change because they fail to take into account the complexities associated with the role of the human element in the change process. Use of VRTs can enable change in organizations, but this technology is associated with VRT members having a limited ability to monitor other team members for deviations from expected behaviors. Often in VRTs, only the product is observable by team members resulting in the process being lost within leaner communication media, asynchronous communication, and a

lack of informal exchanges.

In some cases, use of VRTs is inherently ill-suited to situations where direct observations of behavior are desired. To this end, Gaspar (2001, p. 45) argues "If you manage by watching people work, then virtual teaming isn't a good choice." Given Cialini (1996) perspectives that observation/monitoring of individual's behaviors communicates the message that employees are not trustworthy, use of VRTs may represent an opportunity for unexpected positive outcomes for organizations that implement VRTs. Introducing VRTs within organizational structures represents a tactical measure to be mindfully incorporated into processes aimed at achieving organizational objectives by consideration of the mission/objective of VRTs with respect to situational factors such as organizational norms, task structure, organizational structure, and employee abilities, characteristics, and motives.

### Limitations

This paper explores the variables associated with appraisals of VRTs before working in this environment. It does not address factors associated with actually working in a VRT. However, identifying individuals who perceive VRTs as favorable can provide managers with a starting point from which to choose appropriate candidates for training. In addition, the sample used in this study consisted of undergraduate, management students with minimal prior experience in professional positions. In contrast, a work environment using VRTs would likely be more diverse in terms of participant age, experience using VRTs, and other relevant work and social experiences that may impact the relationships among constructs articulated in this research. The ability to generalize to all employees in organizations is reduced indicating that future research opportunities exist for extending this model to work environments.

### Conclusion

This study examined the effects personality traits have on antecedents of perceived usefulness and intention to use VRTs. Personality traits were found to significantly predict propensity to trust and technology communication anxiety, two indicators of potential success in VRTs. Choosing the right people for VRTs and VRT training can have real effects on costs associated with the training as well as the potential costs of failed attempts to implement virtual teams in an organization. A logical extension of the current study would be to examine the present model in work environments and extend those findings to actual work outcomes.

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# Bank Selection Criteria of Retail Customers in Bangladesh: A Study on Khulna City

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*Bangladesh is a Southeast Asian developing country that has been experiencing a constant GDP growth of over 5% for the last decade. This growing trend in the economy can largely be attributed to the massive growth in the private sector, among whose banking industry has been the largest. With the mushrooming growth for the last 15 years, the banking industry has turned out to be one of the most competitive service industries in Bangladesh today. In order to attract the target customers and compete successfully, it is imperative that banks are aware of the factors customers consider important in selecting a bank. This study was carried out with the goal of evaluating the general pattern of preference for different kinds of banks by different types of customers and to identify the relative importance of different factors to the bank customers in selecting their banks. The study was carried out with a group of 198 bank customers in Khulna, the third largest city in Bangladesh. It was a single cross-sectional study where data were collected directly from the respondents with the help of a structured questionnaire. The study reveals significant differences among the customers of different genders, education levels, and income levels with respect to their preference for different types of banks operating in Bangladesh. The study also reveals that bank customers in Bangladesh places highest emphasis on different factors related to their convenience in availing required banking services in selecting their banks. Other factors customers consider important are economic, promotional, and influence factors.”*

The balanced economic development of any country depends largely on the development of its financial institutions, as they provide much needed funds for establishing and operating the business organizations. After the liberation of Bangladesh in 1971, there were only four commercial banks in the country under state ownership. The banking industry in Bangladesh began to flourish from the early 1980s as the government opened up different sectors for private investment. The banking has experienced mushrooming growth in last decade and at present, the number of scheduled banks in Bangladesh is 49; including 4 public sector commercial banks, 28 national private commercial banks, 12 foreign banks and 5 Development Financial Institutions (DFIs) (Bangladesh Bank, 2006). In general, banks in Bangladesh segment their customers into two major categories: 1) corporate (business) customers and 2) retail customers (consumers). These two groups of customers are usually served by the corporate and retail divisions of the bank.

As the competition intensified in the banking industry and an emphasis on greater customer empowerment has increased in the society overall, the nature of operations carried out and the versatility of services provided by the banks in Bangladesh has also changed significantly in order to attract and retain customers. Banks are now providing a wide range of services and investing a large amount of money in promotional activities, something that was beyond imagination two decades ago. Third generation banks in Bangladesh have come up with latest computer technology such as online banking and ATM services in order to render more efficiency for the customers. To make all these efforts successful in attracting target customers and operate in this competitive market successfully, it is imperative that banks be aware of the factors that their customers consider important when selecting a bank.

Hardly any research effort has been exerted in Bangladesh on this issue so far. Therefore, the aim of our research is to evaluate the pattern of choice of different kinds of banks with the different demographic groups of customers, to identify the factors bank customers consider when selecting a bank, and the relative importance they place on these factors.

## Literature Review

Most of the recent studies on measurement of quality and customers' satisfaction in the service industry used the SERVQUAL model (Buttle, 1996; Robinson, 1999). The SERVQUAL model is comprised of 22 statements that are used to measure service quality across 5 major dimensions such as *Tangibility* (the ability to deliver service dependably and accurately), *Reliability* (willingness to help customers and deliver prompt service), *Responsiveness* (physical facilities, equipments and appearance), *Assurance* (employees' ability to convey trust and confidence and their knowledge and courtesy) and *Empathy* (level of caring and individual attention to customers). Most studies that used this model, used these 22 statements as is, and modified them in order to match them with the context of the study. Jabnoun and Al-Tamimi (2003) used the SERVQUAL model in order to measure the service quality of the commercial banks in UAE and found that the 22 parameters he used for measuring service quality of the banks are grouped under 5 dimensions of the SERVQUAL model in the following way:



*Tangibility:* The bank looks attractive from the outside. The bank has modern equipment and technology, nice interior decoration and comfort, and well-dressed employees.

*Reliability:* Bank statements are issued regularly. Employees are readily available for service and are present at the information desk.

*Responsiveness:* Employees have a helpful attitude, promptly answer telephone calls, have prompt delivery services, and encouraging responses to mail requests.

*Assurance:* Employees are polite and courteous. There is regular communication carried out by the bank. Employees answer queries, are efficient in service delivery, and they provide up-to-date information.

*Empathy:* Customers are given individual attention and easy access to services. There is a short queue line for the ATM and the ATM is easily accessible. The bank has long and convenient operating hours.

As mentioned earlier, hardly any research has been carried out on the bank selection criteria used in Bangladesh. However, literature has revealed that the bank selection criteria used by different categories of customers in some other parts of the world have been extensively researched. Though not all the studies on bank selection criteria use the SERVQUAL model, most of the factors used are similar. In fact most of the factors these studies used are similar to those used by Jabnoun and Al-Tamimi (2003).

Kaufman (1967) carried out a study on the factors used in selecting banks by both business customers and retail (household) customers in the US. The factor that retail bank customers identified as the most important when selecting their banks was a convenient location (Mason & Mayer, 1974). Other important factors they identified were the length of bank-customers relationships, the quality of services offered by the bank, friendly staff, a pleasant loan experience, and the advice of friends and influence of relatives. In the study carried out by Boyd, Leonard and White (1994) on the selection criteria of financial institutions in the US, the five most important criteria identified were: reputation, interest on savings accounts, interest (price) charged on loans, fast service, and different locations throughout the city.

Kaynak and Harcar (2004) found a clear difference among bank customers in the US with respect to their preference for local banks versus national banks. The results indicated that national bank customers placed greater importance on factors like a bank's service charges, their overall confidence in the bank, low interest rates on loans, billing, and higher interest payments with savings accounts. On the other hand, factors that were emphasized by the customers of local banks were: fast and efficient service, available parking spaces, the external appearance of the bank, mass media advertising and the interior comfort of the bank itself. Studies (Gupta & Torkzadeh, 1988; Laroche, Rosenblatt & Manaing, 1986) on the bank customers in Canada showed that customers valued many of the same bank characteristics as customers in the US. Canadian customers looked for careful management of the accounts, rate of interest paid, the politeness and friendliness of staff, procedures for transactions, houses of operation, wait times inside the bank, and the convenience of the location.

A number of studies on this issue were also carried out in different European countries. Zineldin (1996) completed a study on bank customers in Sweden. His findings revealed that the most important criteria used by the consumers in selecting

their banks were service quality and the bank's delivery system. Promotional activities, reputation and differentiation were among other factors that the bank customers of Sweden considered. A study by Holstius and Kaynak (1995) indicated that the factors that determined a customer's preference in selecting a bank in Finland included their personal reception at the bank, how efficient the bank's service was, the cost of service charges, the friendliness of bank employees, and the customer's perceived confidentiality. Kennington, Hill and Rakouska (1999) also carried out a study on bank selection criteria in Poland during the country's transitionary phase from a socialist economy to an open-market economy. They identified that bank customers in Poland considered reputation (a composite of factors like safety, security and trust), rates, service and convenience important when choosing a bank. The term "service" included features like friendliness, politeness, and courtesy. "Rate" referred more specifically to the operating charges for accounts, the cost of different services and the proximity of the bank to a customer's home or work, the bank's hours and the number of branches a bank had.

A number of studies were carried out on the bank selection criteria in the Middle East. Almosawi (2001) researched college students in Bahrain and found what they identified as the five most important factors and the five least important factors for bank selection. The five most important factors were: convenient ATM locations, the location availability of ATMs, the bank's reputation, 24 hour availability of ATM services, and the availability of parking. The five least important factors to the college students in this area were: the recommendation of friends, the recommendation of relatives, being able to bank by mail, and the reception received at the bank. A study among the customers of both conventional and Islamic banks in Jordan (Erol, Kaynak & El-B dour, 1990) suggested that the factors customers emphasized most in bank selection were fast and efficient service, a bank's reputation, the friendliness of bank personnel and the bank's confidentiality policies. Another study (Haron, Ahmed & Planisek, 1994) on bank customers of various religious groups in Malaysia indicated that customers considered the same factors as those in Jordan did in the bank selection process.

**Table 1:** *Factors customers consider in selecting bank and their relative importance in different parts of the world*

<b>Countries</b>	<b>North America</b>	<b>Europe</b>	<b>Middle east and Far East</b>
<b>More important factors</b>	-Convenient location -Reputation -Quick and efficient	-Service quality -Efficiency of service delivery -Perceived confidentiality	-Number of ATM -Convenient locations of ATM -Efficient service -Speed of transactions
<b>Moderately important</b>	-Length of bank -Customer relation -Service quality -Service charge	-Promotional activities -Reputation -Friendliness of personnel	-Friendliness of personnel -Confidentiality -Bank's reputation and image
<b>Less important factors</b>	-Interest offered on deposits -Favorable experience -Promotional activities -Recommendation of friends - Availability of parking spaces	-Lower service charge -Convenient location	-Recommendation of friends relatives -Opportunity for online banking

As demonstrated by the above discussions, the factors bank customers considered when selecting their banks and the degree of importance they place on them varies based on the economic, social and cultural set up in different countries. Taking these differences into consideration, the following table was constructed to show the different factors that bank customers in different parts of the world consider in selecting a bank, as well as the varying degree of importance they place on these factors.

From Table 1, it is evident that though most factors are commonly used by bank customers in different countries for selecting their banks, the emphasis on different factors largely varies among the customers of different parts of the world. As mentioned earlier, though the banking industry has been growing as an industry for the last two decades, the existing literature lacks comprehensive studies on the bank selection criteria used by bank customers in Bangladesh. In this context, this study attempts to investigate the factors bank customers in Bangladesh consider when selecting their banks and the relative importance they place on these factors in doing so.

### Objective of the Study

The overall objective of this study is to evaluate the general pattern of preference for different kinds of banks by different types of customers, as well as identify the relative importance that the bank customers place on different factors in choosing their bank. The following are the specific objectives of the study:

1. Evaluate whether there is a difference in the use of different kinds of banks among the customers of different gender, age, income, and level of education.
2. Determine the relative importance placed by the bank customers on different bank factors in selecting a bank.
3. Group the wide range of factors under a few broad categories on the basis of their homogeneity and based on a customer's preference.

### Methodology

#### *Selection of Variables*

The primary base of the selection of variables was the extensive review of relevant literature. As mentioned earlier, the existing literatures described the bank selection in a completely different context from that in Bangladesh. Therefore, three different rounds of focus group interviews were carried out in order to get a tentative idea about the bank selection criteria of the customers in Bangladesh. One focus group consisted of 6 branch managers of different banks in Khulna, while the other 2 groups consisted of customers of different private and government banks in Khulna city. From the input of literature review and the focus group interview, 26 variables were selected and used in the pilot survey on 30 bank customers. After the pilot survey, 18 variables (Table 3) were finally selected for the study.

### Research Instruments

The research was descriptive in nature and based on a single cross-sectional survey. Data were collected with the help of a self-administered, close-ended questionnaire. The first part of the questionnaire contained six questions which were designed to obtain the relevant demographic information of the respondents. Eighteen variables (selected through the process mentioned above) were listed in the second part of the questionnaire in order to measure the importance bank customers placed on each of them. A 4-point scale was used to measure the importance customers placed on each variable. Scores assigned to the categories “Very important,” “Important,” “Little Important,” and “Not Important” were 4, 3, 2 and 1, respectively.

### Sample and Data Collection

The population of the study was the customers of the commercial banks in Khulna city. A two-phased sampling process was done to select the sample group for the study. The first phase of sampling was associated with the selection of study area. The study area consisted of local branches of the banks. Customers of these branches were selected for surveying. Most of the private banks and the only foreign bank (Standard Chartered Grindlays Bank) have only one branch in Khulna city. All of these branches were initially selected as the study area.

**Table 2: Sample profile**

Demographic Variable	Classes	Frequency	Percentage
Gender	Male	152	76.8
	Female	46	23.2
Age	18-28	42	21.2
	29-33	47	23.7
	34-38	52	26.3
	39-43	29	14.6
	44 and above	28	14.1
	Total	198	100.0
Education	SSC or below	20	10.1
	HSC	20	10.1
	Bachelor	100	50.5
	Masters and above	58	29.3
	Total	198	100.0
Income	3000 or below	12	6.1
	3001-6000	32	16.2
	6001-10,000	78	39.4
	Above 10,000	76	38.4
	Total	198	100.0
Bank Type	Public	102	51.5
	Private	64	32.3
	Foreign	28	14.1
	Total	198	100.0

Along with them, one branch of each of the private and national banks that had more than one branch in Khulna were randomly selected. Therefore all the private, national and foreign banks operating in Khulna city were selected as the study area.

The second stage of sampling was associated with the selection of the sample of bank customers. Selected branches were visited first and questionnaires were distributed among the customers present in the banks during the visit. The number of questionnaires distributed among the customers was 464. Among the questionnaires the researcher received, 230 were sent back through personal visit, postal mail and/or fax. Thirty-two of the returned questionnaires were also eliminated in the screening process, which resulted in a sample size of 198 and a response rate of 42.67%. The following tables show the profile of the sample according to different demographic characteristics.

#### *Data Analysis Techniques*

Both descriptive and inferential statistical techniques were used to analyze the data. Descriptive statistics such as mean, standard deviation and ranking were used to present summary statistics of the study variables. Among the Inferential statistics, a chi-square test was used for comparison and drawing other inference about the variables. All the tests were made with a 95% confidence level.

The reliability coefficient (Cronbach's Alpha) of the obtained data on the bank selection variables was 0.8594, which indicates a high reliability of the data (Nunnally, 1978).

## **Results and Discussion**

The first part of this section discussed the preference level for public, national private, and foreign banks among people with different demographic features. The second part focused on the relative importance customers place on the 18 variables selected for the study. In the last part of the analysis, the 18 variables were categorized and placed under four generic classes based on their homogeneity. This also highlighted the relative importance bank customers placed on the different variables consisting of homogenous factors.

#### *Choice of Bank by Different Demographic Groups*

As mentioned before, respondents were categorized according to 4 different demographic characteristics: Gender, Age, Income, and Education. Table 3 shows the usage pattern of different types of banks by the people in these different demographics.

Table 3 shows that a public bank was preferred by females more than males, while male customers tended to choose the private and foreign banks more than the female customers. Chi-square and the significance level show that this difference is significant.

The bank type referenced by the customers of different age groups is more or less similar. A public bank is preferred the most by the customers of all five age groups. With the exception of the customers from age 39 to 44, the second preference of all the age groups was the national private banks. Customers aged 39 to 44 also preferred foreign banks more than the private banks. As shown by the chi-square value and the significance level, there was no significant difference among the customers of different age groups regarding their choice of bank type. This was shown the most significantly in a customer's bank preference from the view point of their educational background.

**Table 3:** Types of bank chosen by different demographic groups

Groups		Type of Bank			Total	$\chi^2$	P-Value
		Public	Private	Foreign			
Gender	Female	32 (69.6%)	10 (21.7%)	4 (8.7%)	46 (100%)	8.334	0.04
	Male	70 (46.1%)	54 (35.5%)	28 (18.4%)	152 (100%)		
Age group	18-28 years	24 (57.1%)	13 (31.0%)	5 (11.9%)	42 (100.0%)	19.89	0.069
	29-33 years	28 (59.6%)	13 (27.7%)	6 (12.7%)	47 (100.0%)		
	34-38 years	24 (46.2%)	21 (40.4%)	7 (13.4%)	52 (100.0%)		
	39-43 years	13 (44.8%)	6 (20.7%)	10 (34.5%)	29 (100.0%)		
	44 years & above	13 (46.4%)	11 (39.3%)	4 (14.2%)	28 (100.0%)		
Education	SSC or below	15 (75.0%)	5 (25.0%)	0 (0.0%)	20 (100.0%)	17.60	0.007
	HSC	9 (45.0%)	10 (50.0%)	1 (5.0%)	20 (100.0%)		
	Bachelor	42 (42.0%)	34 (34.0%)	24 (24.0%)	100 (100.0%)		
	Masters & above	36 (62.1%)	15 (25.9%)	7 (12.1%)	58 (100.0%)		
Monthly income	3000 or below	9 (75.0%)	2 (16.7%)	1 (8.3%)	12 (100.0%)	45.48	0.00
	3001-6000	22 (68.8%)	5 (15.6%)	5 (15.6%)	32 (100.0%)		
	6001-10,000	54 (69.2%)	20 (25.6%)	4 (5.1%)	78 (100.0%)		
	Above 10,000	17 (22.4%)	37 (48.7%)	22 (78.9%)	76 (100.0%)		

Customers having the lowest and the highest educational background (below SSC and Masters or above) took advantage of the services of a public bank most, whereas national and foreign private banks services were mostly consumed by the customers of two intermediate educational background groups (HSC and Bachelor). As indicated by the chi-square and P-value, the difference among individuals of different educational backgrounds was significant.

Bank preference by different income groups shows that in general, people of lower income levels preferred public bank. However, as their income level rose, their preference changed from public to private and foreign banks. The chi-square and P-value suggests that the difference related to the preference of each bank type was significant.

#### *Relative Importance of Bank Selection Factors*

In this section, a discussion is made regarding the degree of importance the bank customers place on each of the 18 factors in selecting a bank in comparison to the others. Table 4 summarizes this information.

**Table 4:** Ranking and summary statistics of the Bank selection criteria

Rank	Factors	Mean	Mode	SD
1	Fast and efficient service	3.28	4	0.89
2	location near home	3.22	4	0.90
3	Confidentiality of bank	3.14	4	0.96
4	Reputation and image	3.07	3	0.86
5	Friendliness of bank personnel	3.04	3	0.85
6	Higher interest on savings	2.83	3	0.98
7	Loans with favorable terms	2.81	3	1.09
8	Confidence in bank manager	2.78	3	0.87
9	Wide range of service offered	2.75	3	1.00
10	Lower service charges for bill payment and others	2.73	3	0.97
11	Lower interest rate charges	2.70	4	1.11
12	Counter partitions of bank	2.64	3	1.09
13	Mass media advertising	2.64	3	1.10
14	Financial counseling	2.56	4	1.11
15	Availability of credit cards with favorable terms	2.51	1	1.21
16	Interior comfort	2.49	3	0.92
17	External appearance of bank	2.41	3	0.95
18	Recommended by friends	1.97	1	1.01

Table 4 shows the order of preference of the bank selection criteria according to their average scores. It also shows the standard deviation and mode of the scores of the each of the bank selection criteria.

Information in Table 4, when combined with Table 5, gives a complete picture. Table 4 shows the result of factor analysis that was carried out with the 18 variables selected for the study. When factor analysis was conducted, it was found that these criteria were loaded on four factors: Convenience factors, Economic factors, Promotional factors and Influence factors. Table 5 shows the loading of the bank selection criteria based on these four broad categories.

In order to determine customers' inclination to these four broad categories of factors, preference scores (listed in Table 3) of the criteria under each of the factors were averaged. The average score obtained for the Convenience dimension was 2.90, for the Economic dimension 2.78, for the Promotional dimension 2.63, and for the Influence dimension 2.19. As suggested by the average scores of these broad factors (which is also reflected in the preference order of the criteria in Table 3), bank customers considered convenience factors as the most important in choosing their bank. After that came the economic factors, promotional factors and influence factors. If these findings were compared with the previously mentioned study of applying the SERVQUAL model in terms of measuring the service quality of commercial banks in UAE (Jabnoun et al., 2003), it can be noted that top-rated Convenience factors were similar to the factors grouped under the Responsiveness and Assurance dimensions and the second-rated Economic factors were similar to the factors grouped under the Tangibility dimensions of the SERVQUAL model.

**Table 5:** Factor analysis and loading of bank selection criteria

Factors	Components and Loading			
	Convenience	Economic	Promotional	Influence
Location near home	.321			
Fast and efficient service	.606			
Interior comfort	.721			
Counter partitions of bank	.610			
Confidentiality of bank	.721			
Wide range of service offered	.648			
Confidence in bank manager	.603			
Financial counseling	.801			
Reputation and image	.689			
Friendliness of bank personnel	.633			
Lower interest rate charges		.660		
Loans with favorable terms		.660		
Higher interest on savings		.527		
Mass media advertising			.484	
Availability of credit cards with favorable terms			.429	
Lower service charges for bill payment			.652	
Recommended by friends				.616
External appearance of bank				.328

## Conclusion

As far as the demographic variables are concerned, the study found that the preference for three types of bank varied significantly with respect to customers' gender, education level, and income level. The study also found that various factors related to a customer's convenience in carrying out their banking functions were the most important considerations in selecting a bank, followed by the factors related to receiving banking services at a low cost. Since the customers placed the highest priority on their convenience in the banking operations, banks should focus on reducing their procedural complexities and ensuring the delivery of quick services to customers in order to retain existing customers and attract new ones as well.

The study performed is not without some limitations, however. The major limitation was lack of a sampling frame. Many banks were reluctant to disclose their customer lists and profiles, so selecting an accurately representative sample from the population was not a very feasible task. A relatively large number of samples were taken and a careful screening of respondents and completed questionnaires were made in order to overcome these limitations as much as possible.

This study can be valuable both in the academia and in the professional arena. It can provide an insight to the management of banks for appropriate market segmentation and designing an appropriate marketing mix to position their organization within their target markets. This study can also be used as a benchmark to carry out further research on a customer's preference for different kinds of banks and the trend in the factors they consider for bank selection over the time.



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# Impact of Firm Performance on Changes in Strategic Resource Allocation Decisions

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*We tested the effect of prior firm performance on changes in strategic resource allocation decisions under the environmental conditions of an economic recession. Results from a study of commercial banks suggest that the effect of firm performance on changes in resource allocation in response to environmental change is curvilinear and nonmonotonic. Firms with middle-level performance, however, tend to respond to changes in the environment with changes in strategic resource allocations, while both poor-performing firms and high performing firms demonstrate little such changes in response to environmental change.*

When, why, and how firms initiate and implement strategic changes needs to be understood more clearly in the field of strategic management (Rajagopalan & Spreitzer, 1996). Although previous studies have contributed to our knowledge of the phenomenon of strategic change in different contexts (e.g., Boeker, 1989, 1997; Chandler, 1962; Gersick, 1991; Ginsberg, 1988; Kraatz & Zajac, 2001), at least two important questions remain unresolved.

First, are there systematic patterns of change that firms undertake in adapting to changes in macroeconomic conditions? Prior studies examined firms' responses to environmental shocks (Meyer, 1982) and environmental transformations (Grimm & Smith, 1991; Haveman, 1992; Smith & Grimm, 1987). However, how firms respond to macroeconomic conditions remains poorly understood. Specifically, given that resource

allocation is one of the most important strategic decisions (Hofer & Schendel, 1978), how do firms change their strategic resource allocation decisions in response to changes in macroeconomic conditions?

Second, what is the effect of a firm's prior performance on organizational change? On the one hand, firms with performance below the historical norms are more likely to take risks and make changes (Greve, 1998). This view suggests that firms maintain their status quo until faced with failure. Poor performance is likely to trigger corrective actions such as organizational change (Cyert & March, 1963; Pfeffer & Salancik, 1978). On the other hand, poorly performing firms may avoid changes due to a shortage of resources (Cameron & Whetton, 1987) or pessimistic perceptions (Staw, Sandelands & Dutton, 1981). Given the equivocal conclusions about the influence of performance on organizational change, a logical question to ask would be "is the effect of performance on organizational change linear?" Several studies examined the impact of strategic change on firm performance when faced with a change in a macroenvironmental condition such as deregulation (Haveman, 1992; Kim & McIntosh, 1999). However, the influence of a firm's performance on strategic change did not receive much empirical attention.

The macroeconomic condition discussed in this particular study is economic recession. In general, such macroeconomic conditions are likely to place a systematic negative effect on the performance levels of firms. Our empirical context is the commercial banking sector in the states of Kansas, Nebraska and Oklahoma that were affected severely by recession. The banks in these states were relatively free from any confounding effects of other macroenvironmental factors in the banking industry such as currency markets and derivatives markets. The purpose of our study is to observe how firms react to such environmental stimuli. More specifically, this paper addresses two questions:

- 1) During a period when the economy moves from growth into recession, do firms adapt to the economic conditions by making changes in strategic resource allocation decisions?
- 2) How does firm performance affect changes in strategic resource allocation decisions under economic recession? Is the performance effect linear?

We integrate theoretical perspectives of strategic choice (Child, 1972; Hrebiniak & Joyce, 1985), organizational inertia, and threat rigidity (Freeman & Hannan, 1984; Staw et al., 1981) to study the effects of firm performance on firm level strategic resource allocation decisions in response to change in macroeconomic conditions.

## **Theoretical Background and Hypotheses**

### *Strategic Choice, Inertia, Threat-rigidity and Changes in Strategic Resource Allocation Decisions*

Whether organizations undertake changes and adapt to changes in their environments has long been a focal concern for researchers in various fields such as strategy (Ginsberg, 1988; Rajagopalan & Spreitzer, 1996), organization theory (Astely

& Van de Ven, 1983; Haveman, 1992), and sociology (Freeman & Hannan, 1984). A central debate around the question is adaptation vs. inertia or strategic choice vs. determinism (Hrebiniak & Joyce, 1985).

The strategic choice perspective (Andrews, 1971; Child, 1972) argues that organizations (or general managers) purposefully adapt to environmental changes and that strategic choice is the primary link between organizations and their environments (Miles & Snow, 1978). In particular, Andrews (1971) suggests that organizations maintain an organization-environment fit to achieve superior performance. According to the strategic choice perspective, these firms should undertake strategic change in response to environmental changes in order to achieve better organization-environment fit and superior performance.

The other side of the debate, the perspective on inertia or determinism (Freeman & Hannan, 1984), argues that previous success may lead to organizational forces for stability and inertia. These forces act to guard the status quo and resist organizational changes. Another school of thought within the inertia perspective argues that poor performance can also lead to inertia and hamper organizational changes (Staw et al., 1981). The inertia perspective emphasizes the organizational forces that hinder organizational adaptability and focuses on the role of organization specific attributes, such as firm history and previous or current organizational performance (Boeker, 1989; Cameron & Whetton, 1987; Dutton & Duncan, 1987).

Economic recession, an environmental condition which poses challenges to almost every firm, represents an interesting setting for investigating the power of the strategic choice and inertia perspectives in explaining strategic change. Because economic recession is a systematic environmental phenomenon, the threat rigidity-inertia (Staw et al., 1981) and success-inertia (Freeman & Hannan, 1984) arguments that are largely specific to a firm's own history, may not be a good explanation of a typical firm's strategic change under recession. Rather, as the macroeconomic environment moves from growth into recession, it is relatively evident to every firm that a strategic change may be necessary. According to the strategic choice perspective, firms adapt their resource allocations and deployment to match the economic reality of recession. We expect a systematic trend of firms changing their resource allocation decisions in response to economic recession. Therefore, we hypothesize:

*H1: Firms undertake changes in strategic resource allocation decisions in response to economic recession.*

Given the general tendency of firms undertaking organizational changes in response to the economic recession, do all firms respond to the recession in the same way? As suggested by the literature, especially by the inertia perspective (Staw et al., 1981; Freeman & Hannan, 1984), firm performance is an important determinant of the organizational changes of individual firms. Similarly, although not directly citing performance, Kraatz and Zajac (2001) demonstrated that a firm's excess resources could help buffer its technical core from environmental changes and reduce the tendency for change. It will be theoretically interesting and practically relevant to untangle the linkage between firm performance and its changes in strategic decisions

under changing economic conditions.

### *Firm Performance and Changes in Strategic Resource Allocation Decisions*

Literature concerning the performance effects on strategic change remains controversial (Boeker & Goodstein, 1991). Cyert and March (1963) argued that a decline in performance led to corrective managerial actions. Following this argument, when poor performance signals a mismatch between an organization and its environmental conditions, organizational changes should take place. Previous studies on executive succession have shown that poor performance leads to organizational changes (Boeker & Goodstein, 1991; Salancik & Pfeffer, 1980). Other researchers found that poor performance was related to changes in business level strategies (Boeker, 1989; Zajac & Kraatz, 1993). This suggests a negative correlation between firm performance and its strategic change. Such a negative correlation is consistent with the prediction of the strategic choice perspective. Under an economic recession, poorly performing firms should have an added incentive to engage in strategic actions in order to achieve a better fit with the environment.

In contrast, other researchers argue that the implementation of organizational changes is not cost-free, and strategic actions are often characterized by irreversible commitment of resources (Caves, 1984). Organizations need a certain level of resources to initiate and implement changes, even though growth reinforces organizations to continue operations with relatively few changes (Hedberg, 1981). Conceptual work (Dutton & Duncan, 1987) and empirical studies (Cameron & Whetton, 1987) indicate that poorly performing organizations often lack the resources to implement changes, and they even resist change because of pessimistic perceptions of the situations when facing resource shortages.

Given the above conflicting arguments, an interesting question arises as to how poor the performance should be for a firm in order to resist change or undertake change. In other words, is the performance-strategic change relationship linear? Indeed, those who argue that poor performance leads to organizational changes, discuss the poor performance effects in comparison to the effects of satisfactory and/or good performance. Those who argue that poor performance can hinder organizational changes focus their attention more on extremely poor performers, such as firms whose situations were so discouraging that the managerial perception might have regarded the situation beyond repair. In either case, those researchers implicitly assumed a linear relationship between performance and organizational change, and focused their theorization on different levels but not on the whole range of firm performance.

One exception is a study that found a curvilinear relationship between past performance and changes in corporate aggressiveness, as measured by the change in the firm's emphasis on product and market development and change in the firm's risk posture (Fombrun & Ginsberg, 1990). Low performers and high performers are less likely to change than firms with intermediate levels of performance. Another recent study found that firms in the personal computer manufacturing industry, with large deviations in performance from the norm, are most likely to adopt a new technological path. This usually occurs following a change in the technological environment with the advent of open-standard architecture that occurred in 1981 (Hendron, Bednar &

Henderson, 2005). To reconcile the conflicting arguments, we propose a nonlinear relationship between firm performance and strategic change through the whole spectrum of performance level. Therefore, we hypothesize:

*H2a: The relationship between firm performance and changes in strategic resource allocation decisions is curvilinear.*

We argue for a threshold level of performance, below which firms lack the minimal resources to initiate and implement changes. The further the performance runs below this threshold level, the more severe the lack of resources for change will be. Therefore, for firms below this level, we expect a positive association between performance and strategic change. That is, the worse a firm's performance is, the less likely it will be able to undertake the necessary changes.

Above that threshold level, even if the performance is poor, a firm may still have the resources to initiate and implement organizational changes. Poor performance drives firms into a problem-motivated search (March & Simon, 1958) and realignment of a firm with its environment, providing the necessary pressure for change. High performers either find their initial resource allocation to be in line with the changed environment, or find the performance level satisfactory enough to resist any change. The latter can happen even when general managers (Pettigrew, 1973) have detected the mismatch between an organization and its environment. Above the threshold level, we expect a negative relationship between performance and changes in strategic resource allocation decisions. Therefore, we hypothesize:

*H2b: There exists a threshold level of firm performance:*

- 1) Below which the relationship between firm performance and changes in strategic resource allocation decisions is positive, and*
- 2) Above which the relationship between firm performance and changes in strategic resource allocation decisions is negative.*

## Method

### *The Empirical Setting*

The commercial banking industry is the empirical setting for theory testing in this study. First, this industry bears the responsibility of generating and recirculating the flow of activity for the economy through deposits and loans to institutions and individuals. As an indicator of the growth of the economy as a whole, this industry is vulnerable to the fluctuations in the macroeconomic environment. Therefore, it is interesting to see how commercial banks in this important industry cope with recessionary conditions. Second, the commercial banking industry is a regulated industry. As per Federal regulatory agencies, such as the Federal Reserve Board and Federal Deposits Insurance Corporation (FDIC), every insured commercial bank in the U.S. is required to report in detail about their operations and financial status on a quarterly basis. Thus, data on this industry are consistently reported allowing us to observe the changes in banks' resource allocations under various economic conditions (economic recession for this study in particular).

### *Sample and Data*

The sample of this study included all the commercial banks in the states of Kansas, Nebraska and Oklahoma; states that were severely affected by the economic recession of 2001. Kansas, Nebraska and Oklahoma were traditionally unit-branch banking states. Prior to deregulation, there were several restrictions on intrastate branching and interstate banking (Strahan, 2003). Even after deregulation, the commercial banks in these states were not under the ownership of bank holding companies that may have had corporate offices in other states or other countries. Consequently, our sample consists of firms that were relatively autonomous in their ability to make changes in their strategic allocation decisions. Such a homogenous sample is appropriate to test the hypothesized effects, thereby reducing the concerns of noise arising out of other factors that may contribute to changes in the firm.

Because our purpose is to understand how firms change their resource allocation in coping with economic recession, we set our first wave of data collection into the recession rather than at the advent of the recession. The standard index of economic conditions used in economics and by the federal government is the growth rate of GDP, published by the U.S. Department of Commerce. According to the *Economic Report of the President* (2002), the first three quarters of 2001 registered negative growth in GDP. The first quarter of 2000 (ending in March) was before the recession started, and the first quarter of 2001 in March marked the period when the economy was fully into recession. It is reasonable to assume that a period of one year allows enough time for the effects of recession to be obvious to the banks. We collected cross-sectional data for March 2000 and March 2001 in order to capture the period of interest for this study.

We studied the effects of bank performance levels in March of 2000 on the changes in resource allocation decisions in March of 2001. In general, there are time lags between decisions made about resource allocation and changes in the actual patterns of resource allocation due to different durations of loans and different maturity periods of securities. Banks typically report and evaluate their operations on a quarterly basis and therefore, one year should be a reasonable time lag to observe a bank's ability to cope with the recession. The total number of commercial banks in the states of Kansas, Nebraska and Oklahoma in March 2001 was 935. This number included: 1) all of the banks in operation; 2) banks either under merger and acquisition or nonindependent banks that changed their names during this time period, and 3) banks with missing data on key variables of our interest. We removed the latter two types of banks from the sample due to missing data. However, this did not change the overall characteristics of the sample. The final sample size was 929. All of the data for this study was collected from the Call Reports filed quarterly by all insured commercial banks to the FDIC. The data set included all of the items in income statements, balance sheets, as well as financial ratios.

### *Measures*

*Strategic resource allocation decisions.* One of the most important aspects in banking management is the management of assets and liabilities (Johnson & Johnson, 1984). In this study, strategic resource allocation decision refers to the strategic posture of



commercial banks in managing their asset resources (Deephouse, 1996, 1999). Major items in bank assets include cash, securities, loans and lease financing (hereafter referred to as loans), as well as premises (fixed assets), etc.

Loans and securities are the two major areas where banks hold their assets and derive income in the form of interest. Loans, though likely to provide higher interest than securities, are subject to default risk. Such loans are termed as nonperforming loans in the banking industry. Investment on government treasury bonds and other low risk securities represents a relatively secure source of income. Securities and loans account for a large portion of bank assets. Therefore, resource allocation decisions about the combination of security and loan assets reflects the strategic posture of the bank. The larger the proportion of loans relative to securities, the more aggressive the bank is in its operation. We measured resource allocation decision ( $S$ ) as the following ratio:

$$S = \text{Securities} / (\text{Securities} + \text{Loans})$$

Under a recession, the default risk of nonperforming loans is typically high. Holding assets in loans is therefore, a relatively unattractive alternative since many banks face the trouble of nonperforming loans and insolvency, which may lead to bank failure. In the golden years of the 1990s, many banks and Savings & Loans (S&L) institutions issued a tremendous amount of careless loans (possibly for good reasons like gaining market share) which contributed to their failure later on. The bailout of S&L associations warned the bankers to clean up the mess in their balance sheets rather than increase loan lending. Under this kind of recession, regulatory agencies also require stricter procedures in making loans, leading to more complicated credit inquiries and paperwork. This then restricts loan lending.

Bankers should be extremely cautious in making loans under an economic recession and must find other ways to make profits. In addition, in banking literature, Johnson and Johnson (1984) suggest that banks should collect more income from securities and restrict loans under recessionary conditions.

*Change in Strategic Resource Allocation Decision.* In this study, we define the dependent variable change in strategic resource allocation decision as a change in  $S$ , denoted as  $CS$ , measured as the change of  $S$  from 2000 to 2001:

$$CS = S_{2001} - S_{2000}$$

An increase in  $S$  during 2001 indicates a bank's adaptation to the economic conditions in the direction of a better resource deployment-environment match.

*Performance.* The performance measure in this study is return on assets (ROA) in March 2000. ROA is measured as the net operating income after tax as a percentage of the average total assets, which is a widely used overall performance measure in banking studies. It is also closely watched by bank management (Rhoades, 1985).

### Control Variables

*Initial pattern of strategic resource allocation.* The initial pattern of strategic resource allocation of March 2000 is used as a control variable, simply denoted as  $S_{2000}$ . A low initial  $S$  may indicate a relatively poor match between a bank's aggressive strategic posture in resource allocation retained from the relatively high growth period in the 1990s and the onset of recessionary conditions during 2000. We expect that banks with a low initial  $S$  change more than banks with a relatively high initial  $S$  (a relatively better match).

*Firm size.* According to the inertia perspective, large firms may resist changes citing bureaucratization as a primary reason. Large firms are also capable of buffering themselves from any environmental changes owing to the slack resources. We therefore control for the effects of size on changes in resource allocation decisions. Firm size,  $Z$ , is measured as the log of total bank assets, a typical way of measuring size (Hansen & Wernerfelt, 1989).

*Loan Quality.* Given our method of measuring strategic resource allocation decisions, it may be possible that a certain  $S$  value is just an artifact of a bank's write-off policy and different loan quality. A high  $S$  value (i.e., a relatively small proportion of loans) may be caused by a bank's willingness to write off the nonperforming loans, while a low  $S$  value (i.e., a relatively large proportion of loans) may be due to the delay of a bank's write-off. Although we purposefully use net loans rather than total loans in measuring  $S$ , for a more accurate interpretation of  $S$ , we control for the loan quality effect  $Q$ , measured as the ratio of nonperforming loans to total loans. The more the loans are classified as nonperforming loans (i.e., a high  $Q$  value), the less the total amount of net loans. Thus, we predict a positive association between  $Q$  and  $S$ .

## Data Analysis

Hypothesis 1 was tested by checking the direction of the change in  $S$  from 2001 to 2000 and by the comparison of the means of  $S_{2001}$  and  $S_{2000}$ . A significant positive change in resource allocation ( $CS$ ) indicated support for Hypothesis 1. In general, firms undertake changes in their resource allocations to achieve a better fit with the economic conditions of a recession.

Hypothesis 2a was tested using multiple regressions with a multiplicative (quadratic) term of performance. The control variables were  $S$  (resource allocation between loans and securities),  $Q$  (loan quality), and  $Z$  (size of the bank) during the year 2000.  $Y$  in equation 1 below refers to the change in resource allocation pattern ( $CS$ ) and  $X$  refers to performance ( $ROA$ ):

$$Y = a + b_1X + b_2X^2 + S + Q + Z + e \quad (1)$$

Since we only test the significance of unstandardized coefficient  $b_2$  in the equation, multi-colinearity does not pose a severe problem (see Allison, 1977; Venkatraman, 1989). A significant  $b_2$  indicated a curvilinear relation between performance and changes in strategic resource allocation decisions.

Hypothesis 2b was tested using the first order derivative of equation (1) over  $X$ :

$$dY/dX=b_1 + 2b_2X \tag{2}$$

This tested the monotonicity of the X-Y relationship and the potentially different effects of X on Y through the range of X (see Schoonhoven, 1981 for in-depth discussions of this technique in the context of interaction).

### Results

Descriptive statistics and correlations are presented in Table 1. Results of hierarchical regression analysis are reported in Table 2. All the hypotheses were supported.

**Table 1: Descriptive Statistics and Correlations**

	Mean	s.d.	1	2	3	4	5	6	7
1. Change in resource allocation (CS)	0.036	0.059	1						
2. Resource allocation S - 2001	0.339	0.005	.164**	1					
3. Initial Resource Allocations - 2000	0.303	0.005	-.193**	.936**	1				
4. ROA <sup>2</sup>	2.463	0.139	-.198**	-.039	.032	1			
5. Size	10.71	0.036	.125**	-.108**	-.153**	-.064*	1		
6. Loan Quality	0.814	0.039	.134**	-.113**	-.160**	.064*	-.066*	1	
7. ROA	1.238	0.032	.095**	.064*	.030	-.087**	.103**	-.196**	1

N =

\*  $p < .05$ , two tailed tests

\*\*  $p < .01$ , two tailed tests

All variables pertain to year 2000 unless mentioned.

*Hypothesis 1.* A systematic positive change in S was found (mean CS=0.036), which supports H1. In general, firms change resource allocations in response to environmental changes. In this case the change was economic recession. Paired samples t-test procedure was applied to the means of S<sub>2001</sub> and S<sub>2000</sub>, showing a significant difference ( $p < 0.01$ ). This indicates a significant and positive change in strategic resource allocations in response to recession as we predicted.

*Hypothesis 2a and 2b.* The coefficient of ROA\*ROA (square term) was significant at the 0.01 level. The quadratic ROA effects made a significant contribution to the R<sup>2</sup> (R<sup>2</sup>=0.04;  $p < 0.01$ ). This suggests that performance affected changes in strategic resource allocation decisions in a curvilinear fashion. We then checked the monotonicity of this quadratic performance.

$$dCS/dROA= 0.006 - 0.006ROA=0; \text{ ROA}= 1.00\%$$

The inflection point of ROA effect was shown to be at ROA= 1.00%. If ROA falls below this point, the ROA effect on change in strategic resource allocation is positive. To further check the significance of this positive relationship, we did a correlation analysis for the subsample of banks (N=319) with ROA less than 1%. For this subsample, the correlation between ROA and CS was 0.225 ( $p < 0.001$ ). Above the inflection point, ROA was negatively associated with changes in strategic resource allocation decisions. The correlation of ROA and CS for this subsample (N=610) was -0.09 ( $p < 0.05$ ). Therefore, the relationship between firm performance and changes in strategic resource allocation decisions is curvilinear and nonmonotonic.

**Table 1: Descriptive Statistics and Correlations**

Dependent variable – Change in Resource Allocation (CS)

Variable	Step 1	Step 2	Step 3
Constant	-0.084** (0.02)	-0.087** (0.02)	-0.076** (0.019)
Initial Resource Allocation	-0.056** (0.012)	-0.057** (0.012)	-0.054** (0.011)
Size	0.006** (0.002)	0.005** (0.002)	0.005** (0.002)
Loan Quality	0.006** (0.002)	0.007** (0.002)	0.007** (0.002)
ROA		0.007** (0.002)	0.006** (0.002)
ROA <sup>2</sup>			-0.003** (0.000)
R <sup>2</sup>	0.06	0.07	0.11
$\Delta R^2$		0.01**	0.04**
$\Delta F$		12.89**	36.02**

Standard errors are reported in parentheses.

\*\*  $p < 0.01$

\*  $p < 0.05$

N = 929

## Discussion

In summary, the findings from this study strongly support our theoretical arguments and hypotheses. In support of the strategic choice perspective, firms do initiate and implement changes in resource allocations in response to changes in economic conditions. Firms do this in order to improve the matches between their strategic postures and the environmental conditions. In general, the poorer the match between a firm's initial strategic resource allocation and the economic conditions, the larger the magnitude of changes in strategic resource allocation decisions to achieve a better fit. This is evidenced by the significant negative effect of the initial pattern of resource allocation S2000 on the change in the pattern of resource allocation (CS).

Given this general trend, however, individual firms respond to the same environmental stimuli somewhat differently. One important determinant of organizational change is the performance level of a firm. We hypothesized that the performance effect on organizational change was not linear. We proposed a threshold level of performance (more exactly, poor performance), below which, due to resource shortage and/or related pessimistic perception (Cameron & Whetton, 1987; Dutton & Duncan, 1987), organizations might actually resist changes. This assertion largely conformed to the inertia perspective (Staw et al., 1981) and finds support in our study.

Above the threshold point, poor performance might indeed motivate and pressure firms to initiate and implement strategic/organizational changes. Although, in a different context, the results of this study corroborated the findings in previous studies that poor performance leads to organizational (Salancik & Pfeffer, 1980) and board change (Boeker & Goodstein, 1991). Our results conformed to the earlier insights of Cyert and March (1963) and March and Simon (1958) in that firms with poor performance were more likely to engage in problem-motivated search and took corrective actions.

In summary, both the strategic choice and the inertia perspective may be valid in explaining firm changes in strategic resource allocation decisions during economic recession. The general tendency of firms to initiate and implement changes in response to the environmental conditions of recession and improve the resource employment-environment match, supports the argument of the strategic choice perspective. The inertia perspective plays an important role in explaining the different directions (e.g., the nonmonotonic effect of performance) and magnitudes of changes each firm takes in response to economic recession. This lends support to the previous arguments on the choice vs. inertia debate where it is not a question of which side is right or wrong but rather, the concern is about “which perspective is a better description of reality under certain circumstances?” (Child & Kieser, 1981) or “can both perspectives be valid simultaneously?” (Judge & Zeithaml, 1992). Both perspectives are well supported in this particular study.

## Conclusion

In this study, we examined the effects of firm performance on changes in strategic resource allocation decisions under the environmental condition of economic recession. Hypotheses were generated based on both the strategic choice perspective (Andrews, 1971; Child, 1972; Miles & Snow, 1978) and the inertia perspective (Freeman & Hannan, 1984; Staw et al., 1981). The findings of our study suggest that both the strategic choice perspective and the inertia perspective could be useful in the study of firm strategic changes.

Perhaps the most interesting finding and contribution of this study was the curvilinear relationship found between firm performance level and changes in strategic resource allocation decisions. Previous theories which argued that poor performance leads to organizational change (March & Simon, 1958; Cyert & March, 1963) and theories which suggested that poor performance results in resistance to organizational changes may be both correct, though they focus on different ranges of

the performance levels. Across the whole spectrum of firm performance levels, the performance-organizational change relationship could be curvilinear. Our findings were consistent with that of Fombrun and Ginsberg (1990), who found a curvilinear relationship between prior firm performance and strategic posture of firms. However, the focus of the Fombrun and Ginsberg (1990) study was on business level strategies that involved changes in resource allocations and the context was the volatility of industry environment, not the macroenvironment.

This is the first study we are aware of which attempts to theoretically reconcile the previous controversial arguments on the performance-organizational change relationship (Cyert & March, 1963; Staw et al., 1981; Freeman & Hannan, 1984; Dutton & Duncan, 1987) and empirically demonstrate that the performance effect on strategic/organizational change is not monotonic. This suggests that future research should form specific hypotheses and further investigate the effects of various determinants of organizational/strategic changes (Schoonhoven, 1981).

Given the contribution of this study, we must conclude with caveats on the limitations of this study and shall suggest directions for future research. First, this study was performed on a sample drawn from the commercial banking industry in three states in the environment of an economic recession. Due to different banking regulations across state lines and different extents of recession, the results may not be generalizable to banks in other states. A key assumption of our study was that all banks recognize changes in the economic environment and the banks in the sample, in contrast to larger banks, may not be actively managing their securities portfolio by making interest rate bets. This supports our contention that securities (many of which are government) are chosen to reduce default risk and in recessionary times, interest rates tend to fall, which raises the value of debt securities. The assumptions of our study may not be valid in a sample with large banks.

Secondly, further research can test our theoretical arguments in other environmental conditions (e.g., high growth-inflation) and use samples from multiple industries. Third, as a first step towards testing our hypotheses, we focused on one particular area of strategic change in this study (i.e. strategic resource allocation). Multiple attributes and measures of strategic decisions should be adopted as dependent variables in future research for a more extensive capture of the complexity of the phenomena involved in strategic/organizational change (Venkatraman & Grant, 1986).

In terms of managerial implications, the evidence of curvilinear relationship between firm performance and change provides caution to managers from avoiding the past performance trap. It also appears that past performance can be a trap for high performers due to lack of motivation, while the past performance trap for poor performance is due to lack of ability in terms of resources. While numerous prescriptive suggestions are in order for managers of both categories, we would like to underscore the importance of resources especially that of slack resources. In the case of high performers, unwillingness to make changes may result in a decrease in the level of slack resources that are required for day-to-day operations due to the negative impact of environmental change. Because past performance is not a trigger to change for high performers, other organizational mechanisms should be in place to enable

change. As far as the poor performing firms are concerned, it is clear that it is not performance triggers, but rather, resources that enable. Therefore, maintaining a healthy level of slack resources is paramount to avoiding the past performance trap for poor performers.

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#### ERRATA

A typographical error occurred in Volume 14, Number 1 of the *Journal of Business of Management*. The error occurred in article "Student-Manager Surrogacy in Supply Chain Decision Making" by Dr. Chanchai Tangpong and Dr. Young K. Ro, *JBM*, 14(1): 77-91. On page 85, the first paragraph in the "Discussion and Conclusions" section should have been omitted from this manuscript. The first paragraph found on page 86 is the actual introductory paragraph in the "Discussion and Conclusions" section. Please note that the online version (at [www.proquest.com](http://www.proquest.com)) is correct and should be used for referencing purposes.

## NOTES



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